

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Joint Pan American-AVMA Meeting, Kansas City, August 23-27, 1959

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EDITORIAL STAFF: W. A. Aitken, Editor in Chief; Donald A. Price, *Associate Editor*; H. E. Kingman, Jr., *Managing Editor*; Eva G. Bailey, *Assistant to the Editors*.

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Correspondence

After publication of the editorial on "Veterinary Ownership of Biological and Pharmaceutical Supply Firms," in the Jan. 1, 1959, JOURNAL (p. 42), a number of "letters to the editor" were received. The following are representative pertinent excerpts chosen, with the writers' approval, to avoid duplication. Some writers preferred anonymity and the others consented. Therefore, the comments of each are identified only by the state of origin.

New Jersey
Jan. 5, 1959

Gentlemen:

Regarding your editorial, may I go on record as a veterinary practitioner, *not* a member of a co-operative veterinary supply firm, who will defend the right of any veterinarian or any person to invest in any business or undertaking not detrimental to the future of the United States and not unlawful.

Why is the subcommittee so interested in what *may* happen if veterinarians own a veterinary supply house? Is one incident known wherein such a veterinarian has given incorrect treatment to an animal because of his financial interest in such a firm?

Ohio
Jan. 5, 1959

Congratulations on your fine editorial in regard to veterinary ownership of biological and pharmaceutical firms. I am in 100 per cent agreement with you, especially in regard to paragraphs 5 and 6 which have to do with keeping our profession a profession.

Iowa
Jan. 7, 1959

Shouldn't we go slow in criticizing veterinarians who invest in veterinary supply companies? I own no stock in such companies and am not enthusiastic about cooperatives in general, but that is the only way a small company can survive. If such a company would change to a regular private corporation with shares of stock, it would be but a short time before one of the large supply companies would buy 51 per cent of the shares and take over. If some veterinarians with investments in supply companies have been somewhat unethical in their practice, perhaps they were that way before.

Illinois
Jan. 6, 1959

We have been a member of a veterinary-owned company for four years. I feel that we are doing as professional a job today of practicing veterinary

medicine as we did before we joined this group. We have not hurt our neighboring practitioners nor have we been guilty of injuring our public in this community.

New Jersey
Jan. 15, 1959

It seems incongruous to me that your editorial could take off in such a hostile fashion to ethical veterinary practitioners who have banded together in order to better serve their clients.

The crusading zeal of the AVMA might find an avenue of greater profit to the membership if more emphasis were directed to the economic injury and the demoralizing effects of commercial policies promoting direct sales to lay groups. This is a grass roots problem, real and pressing in all areas of veterinary practice.

It is rather ludicrous to think that the public would consider a physician, or a veterinarian, in any less professional terms because he had a direct hand in the manufacture or the compounding of the drug which he felt was the drug of choice to be administered to his patient or to his client's animal. This entire problem is one of integrity and respect. You have not added to either by your editorial.

Nebraska
Jan. 15, 1959

As a member of the AVMA and as citizen John Q. Public, with some knowledge of the factors involved (swine protection, tax equality, ethical standards), I wish to commend you and all others who had a part in developing and expressing your editorial opinion forthrightly and courageously on a controversial subject.

South Dakota
Jan. 26, 1959

Veterinarians have been at the mercy of companies [which] . . . with their right hand run an "ethical" company with sales to veterinarians only [and] . . . with their left hand, a so-called "lay" company pushing sales to . . . bypass the veterinarian for all services except emergencies.

The time is certainly past due for the veterinary profession to emerge from domination by a few big corporations.

[The above comments indicate that many readers interpreted the January 1 editorial as meaning that the AVMA had taken a positive stand on the subject. The editorial in this issue, page 240, should show that the question is far from decided. We appreciate the letters.—ED.]

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1. Mires, M. H., and Chadwick, R. H.: Vet. News 10:3 (Jan.-Feb.) 1947. 2. Mires, M. H.: J. Am. Vet. M. Ass., 117:49 (July) 1950.

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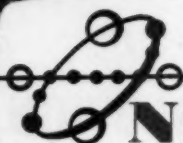
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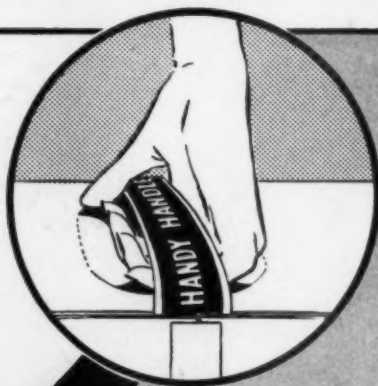


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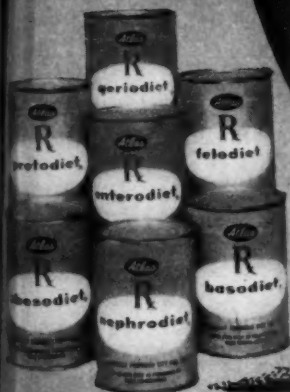
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Origins and Make-up of the AVMA Executive Board

In presenting "This Is Your Executive Board," it is timely to review the origin and subsequent development of the Association's principal administrative body. From 1863 to 1898, what is now the AVMA was known as the United States Veterinary Association. It had a "*Comitia Minora*" of six members, two of whom were *ex officio* (the president, vice-president or president pro tem.) and four "censors." This small committee performed some of the duties later (1896) assigned to an "Executive Committee" of 12 members of whom six were *ex officio* (the president, three vice-presidents, secretary, and treasurer) and six were appointive or elective.

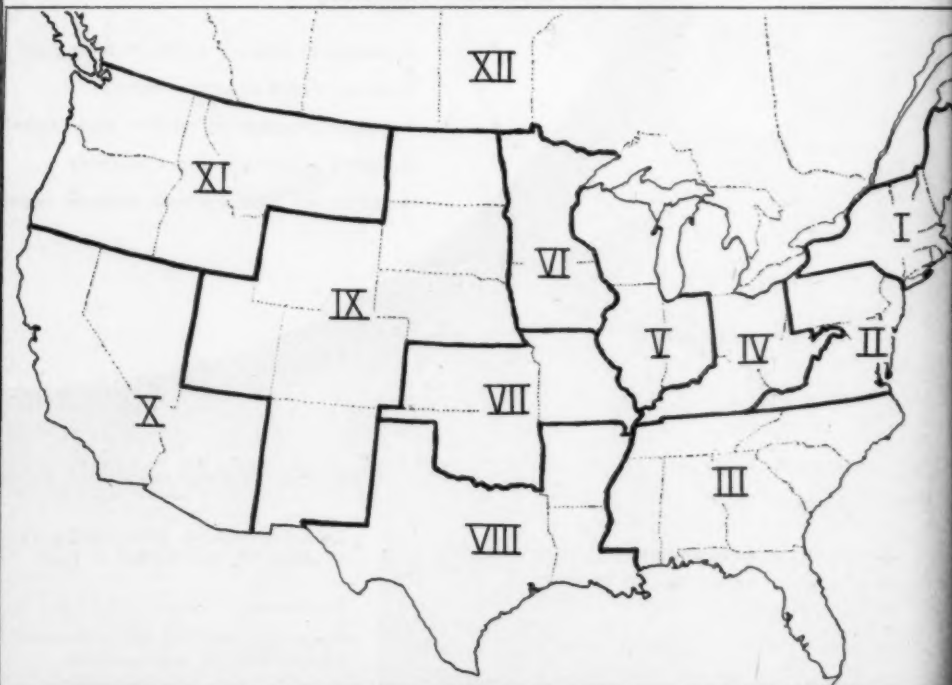
In 1898, the U.S.V.A. was renamed the American Veterinary Medical Association. An Executive Committee of from 12 to 14 *ex officio* and appointive members served as the counterpart of what is now the Executive Board until 1916 when a reorganization plan was adopted. This provided for five Executive Board districts with one elected member from each district, plus one member-at-large—a total of six members. In 1918, another district was created, bringing the membership to seven.


This make-up of the Board continued until 1930 when the next major change was made. Four new districts were created—a total of ten—and the membership was increased to 13 (10 elected district members, an elected member-at-large plus the president and president-elect, *ex officio*). The creation of the four new districts required changing the boundaries of some and renumbering of others.

From 1930 to 1947, no change was made in the Board's make-up except that, in the latter year, an amendment was adopted whereby the out-going president replaced the elected member-at-large, serving *ex officio* for one additional year on the Board. The membership of the Board remained the same—13.

With the adoption of the new Constitution and Bylaws in 1958, the ten existing Board districts were zoned, two new districts were created, and most of the old ones were renumbered (see map). The membership of the Executive Board is now 15 with 12 active or elected members plus the president, president-elect, and the immediate past-president, *ex officio*. The Board holds three regular meetings during the period between the annual sessions of the as-

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sociation—the first, immediately following the close of the annual session, the second, approximately in the middle of the session year, and the third, immediately prior to the annual convention. Special meetings may be called at other times.

Here Is Your Executive Board



Dr. Myron G. Fincher, District I

(Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont)

Dr. Myron G. Fincher (COR '20), Ithaca, N. Y., was elected to the Executive Board in July, 1956.

Dr. Fincher joined the faculty of New York State Veterinary College at Cornell University after receiving his D.V.M. degree. In 1942, he was made assistant professor in the Department of Medicine and Obstetrics and director of the ambulatory clinic. In 1926-1927, while on leave of absence, he served as veterinarian-in-charge of breeding operations on two Thoroughbred farms in Kentucky.

He is the author or co-author of many papers on clinical aspects of dairy cattle diseases, including an organized mastitis control program in New York State which he directed for some time. For these and other research contributions to dairy cattle disease control, he was named the 1954 recipient of the Borden Award administered by the AVMA.

Dr. Mark W. Allam, District II

(Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania, Virginia)

Dr. Mark W. Allam (UP '32), Philadelphia, Pa., was elected to the Executive Board in December, 1958.

Following graduation he engaged in general practice for 13 years at Media, Pa. In 1945, he was appointed assistant professor of veterinary surgery at the School of Veterinary Medicine, University of Pennsylvania, and was made professor in July, 1951. He was appointed dean Feb. 1, 1953.

Dr. Allam has engaged in a number of research projects including peripheral nerve regeneration, use of gelatin in treatment and prevention of shock, and the transplantability of malignant canine neoplasms.



Dr. McKenzie Heath, District III

(Alabama, Florida, Georgia, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee)

Dr. McKenzie Heath (API '19), Auburn, Ala., was elected to the Executive Board in March, 1958, to fill the unexpired portion of the term, ending in 1959, of the late Dr. R. S. Sugg. He had served temporarily by appointment pending completion of the special election.

After receiving his D.V.M. degree, Dr. Heath practiced in Birmingham for several years before joining the veterinary medical faculty at Alabama Polytechnic Institute in 1952, first as a member of the large animal, and later of the small animal, clinical staff.

Dr. Heath represented the Alabama V.M.A. as delegate to the AVMA House of Representatives from 1953 to 1958.

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Your Executive Board—Continued



Dr. Wade O. Brinker, District IV

(Kentucky, Michigan, Ohio, West Virginia)

Dr. Wade O. Brinker (KSC '39), East Lansing, Mich., was elected to the Executive Board in late 1955 to fill the unexpired term, ending in 1959, of the incumbent, Dr. Fred J. Kingma, who had moved out of the District.

Following graduation, Dr. Brinker joined the staff at Michigan State as a graduate assistant. He served with the Army Veterinary Corps from 1941 to 1946, attained the rank of captain, returned to the University after his World War II service, and was named associate professor of surgery and medicine in August, 1948. He was vice-president of the Michigan V.M.A. in 1953.

Dr. E. A. Woelffer, District V

(Illinois, Indiana, Wisconsin)

Dr. E. A. Woelffer (COR '31), Oconomowoc, Wis., was elected to the Executive Board in July, 1958.

Following graduation, he was chief veterinarian of a certified milk farm in Massachusetts until 1947 when he became extension veterinarian at the University of Illinois. In 1948, he became veterinarian for Pabst Farms at Oconomowoc and then entered private practice in 1950, specializing in bovine reproductive diseases.

He has served on various AVMA committees, including the Special Committee on Animal Reproduction and Artificial Insemination.



Dr. Frank B. Young, District VI

(Iowa and Minnesota)

Dr. Frank B. Young (KSC '19), Waukee, Iowa, was elected to the Executive Board in July, 1955.

Dr. Young has practiced in Iowa since graduation. He has been active in state and national veterinary circles for many years, and has served as secretary-treasurer of the Iowa Veterinary Medical Association and as editor of its publication, the *Iowa Veterinarian*, since 1949. He has served on the AVMA Special Committee on Veterinary Supply Problems.





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Dr. William F. Irwin, District VII

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Dr. William F. Irwin (KSC '33), Tulsa, Okla., was elected to the Executive Board in December, 1958.

Following graduation, he worked with Dr. W. C. McConnel, Holdenville, and later Dr. H. Wood Ayers, Oklahoma City. He served with the Bureau of Animal Industry from July, 1934, until June, 1935, and then began a small animal practice in Tulsa, with his wife, Dr. Helen S. Irwin (KSC '33).

Dr. Irwin is a past-president of the American Animal Hospital Association and a member of its Membership and Inspection Committee. He has served as president of the Oklahoma Veterinary Medical Association, and has been a member of the Executive Committee of that organization for the past 12 years. He is also co-chairman of the Small Animal Section of the AVMA.

Dr. Dan J. Anderson, District VIII

(Arkansas, Louisiana, Texas)

Dr. Dan J. Anderson (TEX '38), Smithfield, Texas, was elected to the Executive Board in July, 1956.

Following graduation, Dr. Anderson entered practice in San Antonio, served as animal pathologist for the Ralston Purina Company for a short time, and then returned to practice in Terrill, Texas, until he entered the Veterinary Corps from which he was discharged in 1945 with the rank of captain. He is now a major in the Veterinary Corps Reserve. He was state veterinarian of Texas in 1945-1946 and then returned to general practice in Smithfield. In 1954, he was named "Outstanding Practitioner" of Texas by the state association.

Dr. Anderson was a member of the Texas V.M.A. Executive Board and has served as veterinary advisor to the Southern Regional Education Board.

He was elected chairman of the AVMA Executive Board in 1958.



Dr. Vyrle D. Stauffer, District IX

(Colorado, Nebraska, New Mexico, North Dakota, South Dakota, Utah, Wyoming)

Dr. Vyrle D. Stauffer (COL '42), Arvada, Colo., was elected to the Executive Board in December, 1958.

Following graduation, he served on the clinical staff of Colorado State University until 1945. He was then employed by the Institute of Inter-American Affairs (now International Cooperation Administration) until 1947, and was stationed in Lima, Peru. He remained as consultant to this organization and was sent on short assignments to Haiti and Costa Rica. He entered general practice in 1947 at Arvada.

Dr. Stauffer is a past-president of the Colorado V.M.A., was a delegate to the AVMA House of Representatives from 1956 to 1959, has served on the Committee on Veterinary Service (now Council on Veterinary Service), and also the National Board of Veterinary Examiners from 1956 to 1958. He is presently secretary of the Colorado Veterinary Medical Examining Board.

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Dr. Joseph M. Arburua (SF '15), San Francisco, Calif., was first elected to the Executive Board in 1951 and, in July, 1956, was re-elected for a second term ending in 1961. He served as chairman of the Board in 1955-1956.

Following graduation, Dr. Arburua entered small animal practice in San Francisco and for many years was associated with Dr. John McInnes (SF '16) and later with Dr. McInnes and Dr. M. C. Levy (WSC '31), in the operation of a practice and small animal hospital. He served in the Army Veterinary Corps in both World Wars.

Always active in veterinary affairs locally, in his state and in the AVMA, Dr. Arburua was general chairman of local arrangements for the AVMA convention in San Francisco in 1948. Especially interested in the history of his profession, he was a member of the Committee on History for several years and its chairman in 1950. He retired from active practice in 1955.

Dr. Ernest C. Stone, District XI

(Idaho, Montana, Oregon, Washington)



Dr. Ernest C. Stone (WSC '42), Pullman, Wash., was elected to the Executive Board in July, 1955.

Following graduation, he engaged in private practice and state regulatory work in Kalispell, Mont., for a few years. Then, in 1946 he became a full-time staff member as professor and head of the department of physiology and pharmacology, School of Veterinary Medicine, Washington State College, Pullman, advanced to associate professor in December, 1947, was made department chairman in 1948, and, in 1952, was appointed dean. Prior to studying veterinary medicine, he had been a teaching fellow in chemistry on the College staff from 1936 to 1938.

Dr. Stone served for 27 months in World War II, and is a Lieutenant Commander in the Naval Reserve.

Dr. James A. Henderson, District XII

(Provinces of Canada)



Dr. James A. Henderson (ONT '36), Guelph, Ont., was elected to the Executive Board in July, 1957.

Dr. Henderson has been professor and head of the Department of Medicine and Surgery at the Ontario Veterinary College for several years. He is well known both in this country and abroad for his research in dairy cattle diseases and as a pioneer in artificial insemination work, including the establishment of the first AI breeding unit in North America. Dr. Henderson served with the Royal Canadian Air Force in Great Britain during World War II, and assisted in developing an AI program in that country. He was chairman of the AVMA Special Committee of Reproductive Diseases of Dairy Cattle in 1953-1954, was secretary of the Section on Surgery and Obstetrics in 1953, and chairman in 1954. He is a frequent contributor to AVMA and other veterinary medical association programs.



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President Russell E. Rebrassier (OSU '14), Columbus, Ohio, has been on the faculty of the College of Veterinary Medicine, Ohio State University, since 1916, was chairman of its department of veterinary parasitology from 1945 to 1955, and has been assistant dean since 1955. He was a member of the Council on Education from 1951 to 1957 and its secretary for six years. He was alternate delegate from the Ohio State V.M.A. to the AVMA House of Delegates in 1954 and delegate from 1955 through 1957, when he became president-elect. Dr. Rebrassier has also been a member of the National Board of Veterinary Medical Examiners since 1954, being one of the two members representing the Council on Education.

President-Elect Samuel F. Scheidy (UP '29), Bryn Mawr, Pa., interned for two years following graduation, was field veterinarian for a dairy company for several years, then research associate at the University in 1937-1938, and chief resident veterinarian and instructor there from 1938 to 1943. He then became veterinary medical director of Sharp and Dohme and so served until 1957 when he accepted a similar position with Smith, Kline and French. He continues to serve as a part-time faculty member at the School of Veterinary Medicine, University of Pennsylvania.

Past-President Willis W. Armistead (TEX '38), East Lansing, Mich., was in general practice for two years following graduation, then joined the clinical staff at his alma mater. He served in the Army Veterinary Corps from 1942 to 1946, then rejoined the Texas A. & M. faculty and was appointed dean in 1953. In October, 1956, he was elected AVMA president-elect and in August, 1957 accepted the deanship at the College of Veterinary Medicine, Michigan State University.

The duties of the Executive Board include:

- Transacting all business for or in behalf of the Association;
- Appointing an editor-in-chief or editors for any or all of the Association's publications, an executive secretary, assistant executive secretary, treasurer, and such other officers as the Bylaws may specify;
- Having the Association accounts audited;
- Setting time and duration of the annual convention;
- Acting for and in behalf of the House of Delegates between meetings of the House;
- Appointing necessary committees; and
- Maintaining liaison with constituent associations and the House of Delegates.

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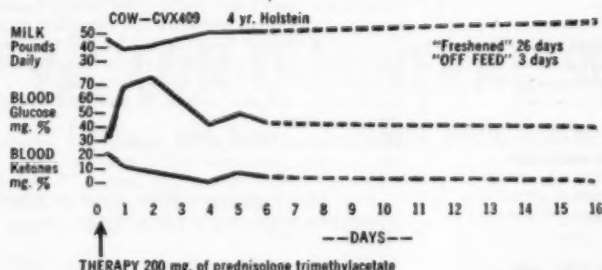
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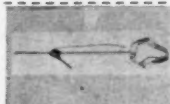
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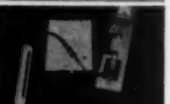
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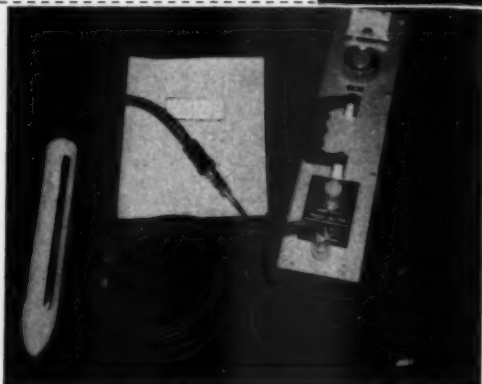
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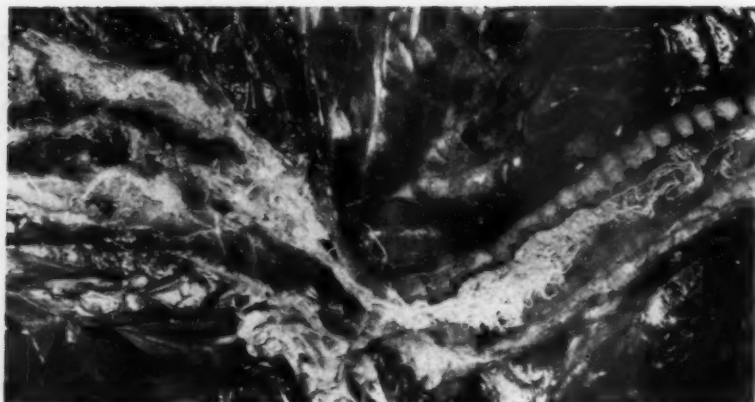
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Ureterocolostomy for Relief of Urinary Stenosis in the Domestic Cat

R. J. BEAMER, D.V.M., M.S.

College Station, Texas

IN THE MALE CAT, urethral occlusion due to mucous plugs and urinary calculi is a serious problem. Urinary calculi may be found in the kidneys, ureters, bladder, or urethra. Renal calculi are usually found in the renal pelvis. One investigator believed that these are rather uncommon in the cat but, when present, tend to remain in the kidney.¹² Ureteral calculi are rare and, in most cases, descend to the bladder. Many fine calculi or "gravel" are passed from the urethra; others form concretions in the urinary bladder.¹⁰

A number of clinicians have observed that urethral calculi are more common in the male due to the small diameter of the urethra.^{1,3,5} Because of inadequate methods of treatment, the mortality rate is high. Castration at a young age is, no doubt, a factor in the development of the size of the urethra. I recommend that cats be allowed to reach an age of at least 8 or 10 months before surgery is performed.

The exact cause of urolithiasis is unknown but several possible factors, some of which overlap, are: (1) urinary infection; (2) vitamin A deficiency; (3) abnormal crystalline or colloid content of the urine; (4) reaction of the urine; (5) inheritance; and (6) hyperparathyroidism.

The most common uroliths in the dog and cat are composed of uric acid or urates, ammonium magnesium phosphate, calcium phosphate, calcium carbonate, calcium oxalate, or cystine. The triple phosphates, car-

bonates, and amorphous urates are precipitated in an alkaline urine while uric acid, urates, oxalates, and crystalline carbonates are precipitated in an acid urine.^{2,4,5,8,9,13,14}

When examining a cat with urinary retention, it is wise to obtain an accurate history concerning previous attacks and the length of time the present signs of tenesmus and licking the penial orifice have been noticed.^{3,7,11} The owner often believes that the straining is caused by constipation. Some affected cats vomit and are dehydrated. It is during this stage that they suffer the effects of uremia due to prolonged urine retention.

Various methods of medicinal and surgical treatment of this condition in the male cat have been reported, but not by ureterocolostomy or urethralcolostomy. This type of surgical procedure had been performed on approximately 50 cats prior to the initiation of this study. The majority were afflicted with urolithiasis. Many were chronically affected and a considerable number were uremic, accounting, perhaps, for the resulting high mortality rate.

The main objective of this investigation was to prove, if possible, whether this surgical procedure could be recommended and used in the everyday practice of feline medicine and surgery.

In order to evaluate this procedure, it was decided to perform the surgery on 10 apparently normal cats (table 1). No definite age determination could be made but all appeared to be near maturity. The average body weight was 9 lb. Following surgery, they were housed separately until

From the Department of Veterinary Medicine and Surgery, A. & M. College of Texas, College Station.

This work is taken from a thesis prepared in partial fulfillment of requirements for the M.S. degree.

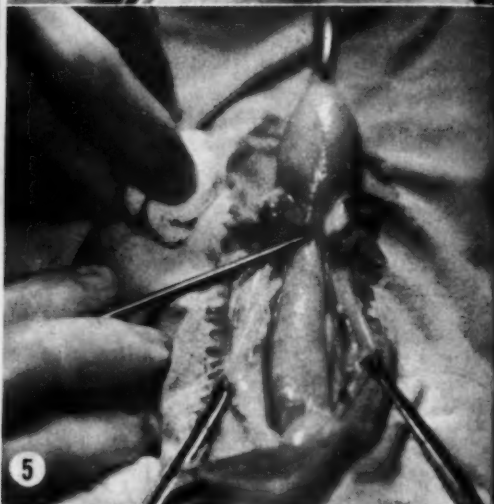
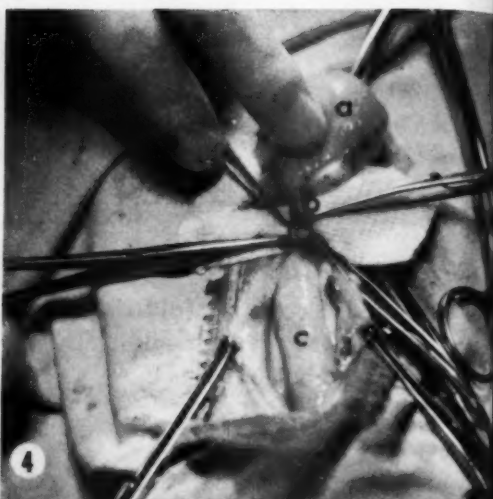
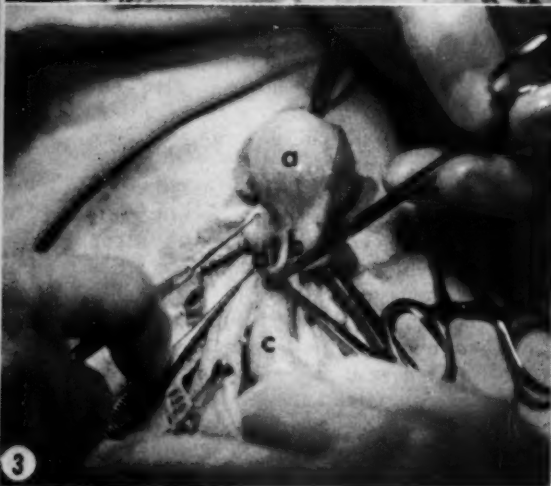
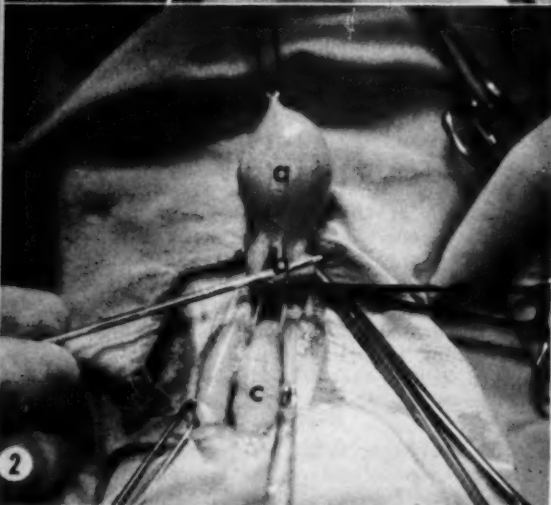


Fig. 1—Ureterocolostomy for urinary stenosis in a male cat; isolation of urethra (b), and its relationship to urinary bladder (a), and colon (c).

Fig. 2—Shows urinary bladder (a), transected urethra (b), and colon (c).

Fig. 3—Shows urinary bladder (a), transected urethra (b), colon (c), and plastic tube extending through incision in wall of colon (d).

Fig. 4—Relationship of parts when plastic tube (d) extends from bladder (a) to anus by way of the urethra (b) and opening in wall of colon (c).

Fig. 5—Neck of bladder has been sutured to opening in wall of colon; closure of abdominal incision is next step.

death or recovery, and were fed cooked horsemeat, commercial dog food, and milk. No dietary supplement was added. Water was available at all times.

DISCUSSION AND PROCEDURE

The majority of cats afflicted with urolithiasis are poor surgical risks when presented for treatment. While many have signs of uremia or ammonia poisoning, others are chronically affected and the condition is usually complicated with cystitis and hydronephrosis, or both.

Ether was the anesthetic chosen for the experiment since there is a possibility of

reabsorption of toxins from injectable anesthetics.

The small diameter of the ureter of the male cat presented problems in surgical manipulation. The greatest problem was to keep the lumen patent both in transplantation and after anchorage in the wall of the colon. Impatency after anchorage was caused by the accumulation of mucus and fibrin from the intestine and by pressure from the surrounding area of inflammation. Attempts were made to pass a small polyethylene tube into the lumen of the ureter but this only caused more trauma so the attempts were abandoned. It was also found that the tube would become

TABLE 1—Results of Surgical Procedures Designed to Relieve Urinary Stenosis in the Domestic Cat

Case No.	Procedure	Postsurgical observation	Fecal consistency	Observation at necropsy
1	Direct ureterocolostomy	Ate for 2 days, bright and alert; normal temp.; 3rd day lethargic, vomited, died on 5th day.	Normal, no evidence of urine.	Ureters impatent; opening plugged with fibrin; death caused by uremia.
2	Direct ureterocolostomy	Ate next day; temp. normal; evidence of straining; no food next 4 days; temp. 104 F.; died on 5th day.	Semi-solid; several times daily.	Urine in abdominal cavity; pale liver; dilatation of pelvis of kidney; ureters closed by purulent plugs; death caused by uremia.
3	Direct ureterocolostomy	1st day normal temp.; refused food; 2nd day vomiting; died 3rd day.	None.	Right ureter impatent from fibrinous exudate; kidney pale and swollen; death caused by uremia.
4	Direct ureterocolostomy	Ate for 2 days; 3rd day refused food, dehydrated; considerable straining; died on 4th day.	Diarrhea.	Hydrothorax and pulmonary edema; myocarditis; bilateral ureteral impatency; death caused by uremia.
5	Direct ureterocolostomy	Anorexia, dehydration, temp. normal; no response to treatment; died on 4th day.	Diarrhea.	Ureters impatent from mucopurulent exudate; kidneys pale and swollen; death caused by uremia.
6	Piece of bladder ½ inch square and adjacent ureters transplanted into colonic wall	Ate well for 3 days; acted normal; intermittent straining; found dead in cage 4 days later.	Slight diarrhea.	Kidneys and ureters normal; slight edema of lungs; cause of death unexplainable.
7	Urethra transplanted into wall of colon	Uncomplicated recovery; still alive after 5 months.	Semi-solid, b.i.d.	None.
8	Urethra transplanted into wall of colon	Some tenesmus until plastic tube was removed; still alive.	Semi-solid, t.i.d.	None.
9	Urethra transplanted into wall of colon	Uncomplicated recovery; still alive.	Semi-solid, t.i.d.	None.
10	Urethra transplanted into wall of colon	Pentobarbital sodium used instead of ether anesthesia; cat remained in a semicomatose condition for 3 days; died on 4th day.	None.	None.

obstructed with mucus as did the ureter without the tubing.

An attempt was then made to remove and transplant into the colon a small segment of the wall of the urinary bladder in conjunction with the distal end of the ureter. The surgery was successful but, as in the former experiments, the lumen of the ureter became occluded.

It was apparent, after the above experiments had resulted in the loss of all animals concerned, that further efforts with transplantation of the ureter would be useless and that an operation involving a more distal part of the urinary tract should be done. If successful, such an operation would give relief from calcareous or other forms of obstruction involving the distal part of the urethra.

The neck of the urinary bladder was ligated and transected immediately anterior to the prostate gland and an opening was made into the colon (fig. 1, 2). A piece of plastic tubing of small bore was passed through the colonic opening into the lumen of the colon and out through the anus and sutured to the skin to retain it in position (fig. 3). The other end of the plastic tube was passed through the neck of the bladder and into the fundus of the urinary bladder (fig. 4). The neck of the bladder was then sutured to the opening in the colon (fig. 5). The tube was allowed to remain in place for seven days before removal.

This operation proved successful and should be the preferred surgical technique in alleviating chronic urolithiasis.

SUMMARY

Ten male cats were used in a project to develop a surgical technique for the alleviation of urolithiasis. In 5, direct ureterocolostomy was successfully performed but all died one to five days postoperatively due to secondary complications. In 1 cat, a piece of bladder was transplanted into the colon. This one also died.

In 4 other cats, the neck of the bladder was transplanted into the colon. Three of the 4 made uncomplicated recoveries, while the other 1 died from peritonitis.

Urethralcolostomies have since been performed on more cats and all made uncomplicated recoveries.

CONCLUSIONS

On the basis of the presented data, the following conclusions have been drawn:

1) Using the technique described, direct ureterocolostomy in the male cat is not successful.

2) The transplantation of a section of bladder, with ureters intact, into the colon may have some merit but needs further study.

3) Transplantation of the neck of the bladder into the colon proved to be successful. This method can be used to alleviate urethral urolithiasis surgically.

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Spread of Rinderpest in Frozen Meat

Rinderpest virus will not live at 25 C. (77 F.) for more than ten days, but below freezing it will persist for several months. However, the disease is not known to have been carried to new areas except by the introduction of affected living animals.—*Vet. Bull. (Nov., 1958): Item 3587.*

Trichina Transmitted on Knives.—Small numbers of *Trichinella spiralis* larvae were recovered on five of eight occasions on the knife which had been used to make many incisions in the carcasses of heavily infected guinea pigs.—*Vet. Bull. (Nov., 1958): Item 3629.*

The Practice of Veterinary Medicine in a Changing World

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SEVERAL YEARS ago, one of the scribes of the Federal Reserve Bank of Philadelphia, in a series of articles about the cow, said: "Of all groups associated with the dairy industry, only the cow looks happy. Yet, her entire life is regulated. She is robbed of her children a few days after they are born. She is scientifically bred, dietetically fed, mechanically milked, and romantically bilked." That, and other tender remarks about the cow, betrays the scribe's sympathetic attitude toward animals. Perhaps he is not so much out of place at this convention of veterinarians as he thinks.

It was quite a number of years before I was aware of the existence of veterinarians. You veterinarians might be able to say the same about economists. Both are comparatively rare species, and an impartial appraisal might indicate that economists are more dispensable than veterinarians.

Ordinarily—that is, when not in convention—the veterinarian doesn't make much noise. He is apt to be overworked, underpaid, and overlooked. About the only time he gets into the newspapers is when a fast-stepping horse like Tim Tam gets a sore foot which requires surgery.

The practice of veterinary medicine has undergone a transformation that reflects some broad and basic changes in our way of life. Some of us can recall how we, as kids, ran to the curb to see the occasional automobile passing by. Now, we must run for the curb to save our lives. All of us can remember when atomic energy was nothing but science-fiction stuffing for Sunday supplements. Now, nuclear explosions are an abomination. We have witnessed the appearance of jet-propelled airplanes that threaten to tear the sky apart, and we are promised space craft that will travel to the moon. Most of us, no doubt, prefer to await the development of round-trip service.

While all these and other spectacular developments were taking place, less dra-

matic but no less important changes were taking place in our national economy. Probably the most important changes, so far as the practice of veterinary medicine is concerned, are the Agricultural Revolution and the Urban Evolution. The market for the professional services of the veterinarian has been greatly altered—on the one hand by the mechanization of agriculture and on the other hand by the growth of metropolitan areas. Let us consider first the agricultural revolution.

THE AGRICULTURAL REVOLUTION

The horse is the victim (or perhaps the benefactor) of a great agricultural revolution. Life on the farm used to center around the horse. Horses furnished the motive power for all the field machinery; for trucking, hauling, and passenger transportation; for logging the woodlots; for filling ice houses; for lifting hay into the barn; for threshing the grain; for almost every job around the farm except getting the hired man up in the morning.

Just about a half century ago, American farms were populated and powered with 26 million horses and mules. That number has steadily declined to approximately 3½ million today. Of course, it was the tractor that took the place of the horse. During this period, the number of tractors on farms increased from a few hundred to almost 5 million. On the highways today, one seldom sees a horse-drawn vehicle.

The mechanization of agriculture is not confined to the substitution of tractors for horses. Machinery is used for an ever-widening variety of chores on the farm. In the comparatively short period since the end of World War II in 1945, the number of farms with milking machines has doubled. The use of grain combines has tripled. Corn pickers have quadrupled, and there has been a twelvefold increase in the use of pick-up balers and field forage harvesters.

The most obvious and immediate effect of the decline in horses was a decline in the demand for the services of veterinarians. As a consequence, fewer young people

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enrolled in schools of veterinary medicine and, in time, the number of practitioners actually decreased. Between 1920 and 1933, the number of veterinarians practicing in the United States and Canada declined from more than 12,000 to approximately 11,000. It began to appear that the profession had reached its plateau or was on the decline, but it wasn't.

Mechanization and improved technology, both on and off the farm, have brought about other changes in agriculture of considerable consequence to veterinarians. Farms are becoming fewer, larger, and more productive.

An evidence of their growing productivity is the ever-increasing number of people supported by the output of one farm worker. In 1945, one farm worker produced enough food and fiber to support 15 people. According to the latest reports, one farm worker produces enough to support 21 persons—a 40 per cent growth in productivity in a dozen years. While mechanization has been largely responsible for the increased productivity, there have been contributing factors, such as the greater use of fertilizers, crop rotation, better pest and disease control, and improvements in animal husbandry.

Directly related to the increased mechanization, growing efficiency, and larger output of farms is the decline in farm population. Our farm population receded from 32 million in 1910 to 20 million in 1957. In other words, farmers represented 35 per cent of the country's population in 1910, but now account for a mere 12 per cent of the total. In Congress, however, they still seem to "throw a lot of weight."

Farms are not only becoming fewer but also larger. This is shown by the steadily rising proportion of our agricultural output that is produced on the large farms. Small-scale farms with annual marketings under \$2,500 and little or no off-farm income dropped from 2,857,000 in 1939 to 1,174,000 in 1954. During the same period, medium-sized farms with marketings of \$2,500 to \$4,999 dropped from 1,015,000 to 811,000, and large commercial farms—that is, those with gross product sales of \$5,000 or more—increased in numbers from 897,000 in 1939 to 1,290,000 in 1954. To be sure, rising prices account for some of the change, but the trend toward larger-scale farming is unmistakable.

The trend toward larger-scale farming

is bringing about a substantial change in the nature of services demanded of the veterinarian. Today's livestock producer is much better informed than his predecessor of yesterday, and he wants more from his veterinarian than just attention to his sick animals. He wants information and guidance in improving the fertility of his herds. He wants maximum results from every pound of feed. He expects his veterinarian to be well informed on the latest developments in the field of preventive medicine and parasite control. The livestock producer wants more frequent and careful inspection of his animals and premises so that losses through disease will be held to a minimum. Moreover, he wants to avoid the wasteful use of costly fortified feeds, yet make the best possible use of improved antibiotics, biologics, and hormones in his feeding programs.

The development of large-scale farming affects the practice of veterinary medicine in still other ways. Ministering to the sick farm animal will always have its place, but larger farms mean larger herds, and much of the veterinarian's work takes on some of the aspects of mass production. When the purpose of a call is blood testing or vaccination, the greater the number of animals treated, the greater the economy.

Despite the drastic decline in the numbers of horses and mules, the large animal population on our farms shows surprising stability. Comparing, by species, the farm animal population of 1900 with that of today, we find a somewhat better than 50 per cent increase in the number of cattle, no change in the number of swine, a substantial decline in the sheep population and, as already observed, a sharp decline in horses and mules. In fact, the increase in cattle numbers just counterbalances the decrease in sheep and draft animals, so that the total large animal population on our farms today is 180 million—exactly what it was in 1900.

While the farm animal population has remained unchanged since the turn of the century, the number of veterinarians has risen from 4,000 to 20,000—a fivefold increase.

Now the question might be asked: If 4,000 veterinarians could take care of 180 million farm animals more than a half century ago, why does it take five times as many veterinarians to take care of the same number today?

There are several answers. Farm animals are getting more and better care than they used to get, particularly in the way of preventive medicine. Another answer is the expanding urban and suburban demand for veterinary services.

THE URBAN EVOLUTION

The practice of veterinary medicine is no longer confined to farm animals kept for utilitarian purposes. A practice of almost equal importance has grown up in the care of small animals kept as pets, and their habitat is predominantly the cities and the suburbs. Prior to the first world war, the country's population was mostly rural. Now, two thirds of the population lives in cities.

Why people should want to be huddled together in great clusters where they have to live on a shelf and ride to work in a ditch is difficult to understand, but that is the trend. Cities have sprung up like weeds in almost every section of the country. In 1900, there were 38 cities of 100,000 population or more in the United States. The 1950 census revealed 107 cities of that size.

A development of even more significance to veterinarians is the way cities are bursting their bounds with people spilling over the edges into the suburbs. The 1950 census lists 168 metropolitan areas in each of which there is a central city of at least 50,000 people and an inevitable suburban overflow of varying intensity, ranging from a trickle to a stampede. The country's suburban population is half again as large as it was a mere decade ago.

Suburbanites—approximately 35 million strong—are the pace-setters when it comes to spending. Their income is well above the national average, they have large families with larger-than-average size wants. In suburbia, where children are more numerous than in the average American family, children's wants are likely to be the families' wants. Children love pets, and it is the rare family with children that is without a cat or dog. While no dog census has ever been taken, the nation's dog population is estimated to be well over 25 million. The country's cat population is estimated to be about 23 million.

Catering to the country's dogs is a \$500 million annual business, and it is constantly growing. Medical care for some dogs is on a par with that for human beings. Small animal hospitals number approximately

3,500. Thousands of pets which ten or fifteen years ago would have died now recover from serious illness, and the life expectancy of dogs has been raised considerably.

The veterinarian catering to small animals finds it profitable to be more than just a doctor to sick animals. The boarding of dogs and cats is a rapidly growing practice. As soon as schools close, people about to go on vacation look to their veterinarian to board their pets while away from home. The fact that they turn to the veterinarian shows that they want more than baby-sitting service for their pets; they want professional care.

Moreover, many of the owners of pets are fastidious and shop around among veterinarians to find out who offers the best facilities in the way of size of cages, area of runways, etc. Probably one reason why owners of dogs are getting more particular is the increasing ownership of purebred animals. Over one third of the present dog population is purebred.

All these developments point to the fact that owners of pets have more money to spend and that they are willing to spend it to increase their own standard of living and that of their pets. Tomorrow's veterinarian may have to build separate canine and feline motels equipped with picture windows, air conditioning, and tree-lined walks.

SOME VETERINARY ECONOMICS

The Kilpatrick Committee in its 1955 to 1956 survey of veterinary practitioners discovered some interesting things about the economic aspects of the practice of veterinary medicine. How much a veterinarian makes seems to depend upon where he lives, what kind of practice he has, how long he has been practicing, how hard he works, and what kind of facilities he has.

To be more specific, the Committee discovered that the average net income of all veterinarians in the United States in 1955 was \$10,694. According to a similar survey, the net income of physicians in the same year was \$16,017—almost 50 per cent higher than that of veterinarians. The differential, however, is apparently narrowing. Between 1950 and 1955, the net income of veterinarians rose 45 per cent, whereas the net income of doctors rose only about half as much.

The income of veterinarians differs con-

siderably from one part of the country to another. It ranged from a low of \$5,583 in Wyoming to a high of \$13,667 in the District of Columbia. As you might suppose, there are more veterinarians in the District of Columbia than in Wyoming. Among physicians there is a similar though not identical geographical disparity in net income. Medical doctors earned more than veterinarians in all states for which comparative data are available except in Maryland and New York. The amounts by which veterinarians were better off than medical doctors in these two states, however, were rather small.

Veterinarians are harder workers than medical doctors. Both put in long hours, judged by modern standards. Veterinarians average 63 hours a week in contrast with 60 hours for physicians.

In 1950, 37 per cent of the gross income of veterinarians came from small animal practice. By 1955, fully 45 per cent of gross income came from small animal practice. In view of the rapid growth of this practice, it might be supposed that pet animal practice is more remunerative than farm animal practice. In the Kilpatrick study, however, it was found that the average income of veterinarians in a state is not dependent on the percentage of income from pet animal practice in that state. Moreover, it is not surprising to find that the percentage of income from pet animal practice differs substantially from one part of the country to another. It ranges from a low of 28 per cent in the Middle West to a high of 55 per cent in the Northeast and the West. Among the states, the extremes are 86 per cent in Rhode Island and only 8 per cent in Minnesota and South Dakota.

It was also found that although 12 per cent of the total gross income from veterinary practice comes from swine practice, income from swine practice is almost wholly confined to the Corn Belt.

A favorable note on which to end this brief summary of the Kilpatrick report is to cite the record of the veterinarians on the top rungs of the income ladder. One third of those reporting had net incomes in 1955 of more than \$12,000. The average for these top-flight veterinarians was \$17,161. The topmost figure was not disclosed—which is well, for it would only serve to make all but the recipient feel bad.

The material rewards received by veteri-

narians seem wholly inadequate for the services rendered. Veterinarians are the specialists of last resort in guarding the health of our farm animals and pets. Farm animals represent an investment of \$14 billion, and the value of our pets is incalculable.

THE WORLD KEEPS ON CHANGING

Changes in the American way of life have already brought about significant changes in the practice of veterinary medicine but they may be insignificant relative to changes yet to come. One change we can be reasonably sure of is an increasing demand for the services of veterinarians because of a rapidly increasing population. Every morning the sun rises, over 8,000 additional voices are heard joining in the chorus, "When do we eat?"

Even more favorable than the over-all growth of the population is the changing age composition of the population in the years immediately ahead of us. As a result of the large postwar baby boom, the number of young people in the 5- to 19-year age group will increase at least 25 per cent by 1965. That part of the population is the best market for pets, and the cat and dog population is already growing faster than the human population.

The farm demand for services of veterinarians may also be expected to grow, perhaps not so much from greater numbers of animals but greater care in animal husbandry.

Though forced to look through a glass darkly, I would take my stand with the optimists in appraising the future of the practice of veterinary medicine.

Histopathology of Edema Disease

This disease of swine, characterized by edema of the eyelids, face, and ears, by exudate in the body cavities, and by serogelatinous edema of the mesocolon, was studied in eight different parts of Romania in 1957.

There was hyalinization of the walls of small vessels, thrombosis of these vessels, as well as perivascular and perineuronal edema. The vascular changes are believed to partially explain the genesis of the edemas.—T. Bugeac et al. in *Yearbook Inst. Anim. Pathol. and Hyg., Bucharest, 8, (1957): 290.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below—then turn the page ►

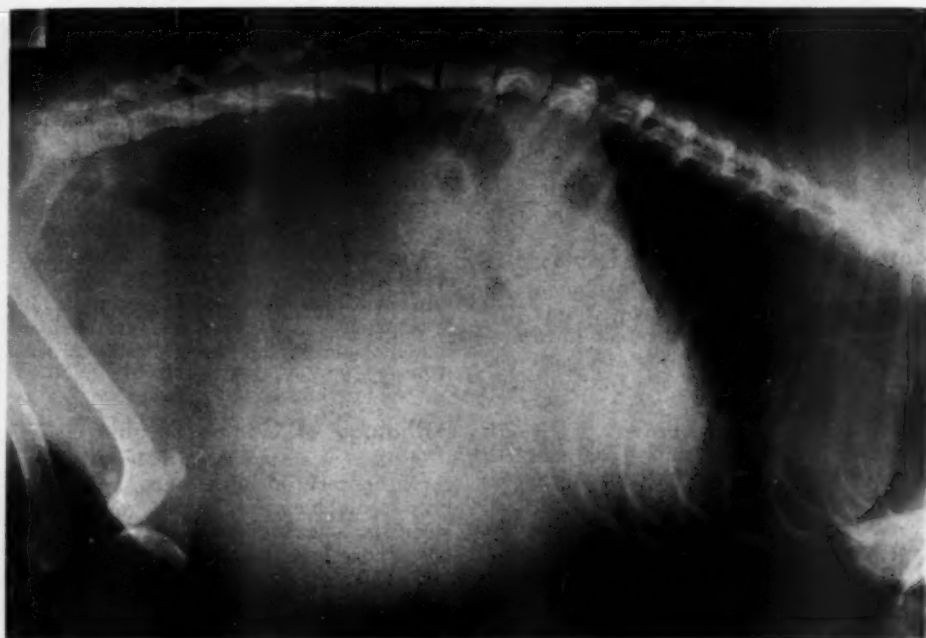


Figure 1

History.—A female Beagle dog, 5 years old, was hit by an automobile. After the accident, she walked without a limp and the injuries were thought to be minor, although she vomited and refused to eat. By the third day, the owner realized that the dog was voiding no urine, but only two or three drops of blood each time she strained to urinate. A lateral standing radiograph was taken.

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Generalized peritonitis. Notice the ground-glass appearance of the abdomen which masks the shadows of the visceral pattern.

Comment.—At laparotomy of the Beagle, an estimated 1,200 ml. of sanguineous-tinged fluid (urine) was found in the abdominal cavity, the result of a rupture of the urinary bladder. Such a finding is not unusual if the accident occurs when the bladder is distended. Diagnosis is frequently missed because of the slow onset of toxemia and the failure of the observer to realize that the dog is not voiding urine. Aspiration of urine from the peritoneal cavity is diagnostic, but if the needle enters an area walled off by the omentum, or if the needle pierces an organ and no fluid is recovered, the conclusion may be erroneous.

This report was submitted by Wilbur H. Crago, Youngstown, Ohio.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Autosterilization Against Rabies

Immunization of mice against rabies can lengthen the incubation period and the duration of the disease against intracerebral challenge since the central nervous system is then almost always autosterilized.

The autosterilization process may result in a "cured paralytic rabies," characterized by neuromuscular sequelae, as in poliomyelitis. This paralytic syndrome differs from the allergic demyelination which results from anti-rabic treatment.

In partially immunized animals, rabies usually behaves like poliomyelitis or any other autosterilizable, neurotropic, curable disease.—*Vet. Bull. (Nov., 1958): Item 3570.*

Immunological Unresponsiveness

Lack of response to antigenic stimulation may be the result of four phenomena:

- 1) Agammaglobulinemia—the congenital or temporary lack of production of antibody protein.
- 2) Destruction of the antibody-producing cells by external influences, such as irradiation.
- 3) "Immunological paralysis"—the inhibition of production of a particular antibody by the large amounts of the corresponding antigen.

4) "Acquired tolerance," an induced state of specific nonreactivity toward a substance that is normally antigenic due to a primary failure of the machinery of immunological response.—*Editorial in Ann. Allergy, 16, (Oct., 1958): 582.*

Pathology of Canine *Dirofilariasis*

The lesions caused by *Dirofilaria immitis*, the heartworm of dogs, were studied. The prominent changes observed were: hemosiderosis, chronic inflammation, thrombosis, fibrosis, and moderate emphysema in the lungs; erythrophagia and hemosiderosis in the lymph nodes; hemosiderosis in the spleen; passive venous and, in advanced cases, lymphatic congestion in the liver; and ascites and anasarca.

The lesions and their relationship to clinical manifestations indicated that no toxin was produced by the parasites. The pulmonary hemosiderosis and inflammation probably were caused by the waste products of the adults' digestion.

In chronic cases, the inflammation resulted in pulmonary fibrosis with moderate emphysema; this was mainly responsible for the irreversible circulatory disturbances, the development of ascites and anasarca, and the poor prognosis in advanced cases.—[Hans Winter: *The Pathology of Canine Dirofilariasis. Am. J. Vet. Res., 20, (March, 1959): 366-371.*]

Notes from the Indiana V.M.A. Convention, 1959

Mastitis Control

Despite forceful advertising and promotional gimmicks on behalf of mastitis "cures," the incidence and severity of this disease continue unabated. Treatments for mastitis constitute a \$25 million business to drug manufacturers, with over 75 train carloads of the drugs sold annually in the United States for this purpose.

The widespread and promiscuous use of antibiotics in the treatment of mastitis has not resulted in a decrease of the incidence of this disease. However, it has resulted in detectable amounts of antibiotics being delivered to the consumer through the milk, in the development of resistant strains of bacteria, and in costly losses to dairy-products manufacturers due to interference with curd formation.—*John B. Herrick, D.V.M., Ames, Iowa.*

Antibiotics in Feeds

Generally speaking, antibiotics in feeds have been effective, nutritious, and economical. Their use has benefited livestock production to the extent of about \$1.5 billion per year.

The use of antibiotics has emphasized the importance of the health status of livestock. The benefits from antibiotics in feeds is not so much from improved nutrition as from the improved health of the animals.

Many nutritional problems are precipitated by infectious agents. Therefore, veterinarians should be cautious about ascribing the cause of malnutrition to feed just because improved rations correct the condition. They should remember that the malnutrition may have been due, in the first place, to infection.—*C. K. Whitehair, D.V.M., East Lansing, Mich.*

Jowl Abscesses in Swine

The causative agent of the jowl abscess apparently invades through the pharyngeal mucosa. It has been shown that these streptococcal organisms do not always find their way to the pharyngeal lymph glands; they may become localized in the base of the tongue or in the tonsils.

Apparently healthy carriers of the organism may be responsible for transmitting the disease. Although it should be possible to produce an effective vaccine against the condition, this has not been done to date.—*W. P. Switzer, D.V.M., Ames, Iowa.*

Infectious Atrophic Rhinitis

This disease is a complex rather than a single entity. Anything that causes chronic rhinitis in young pigs may produce turbinate atrophy. For example, regularly spraying 2 per cent acetic acid into the nostrils of young pigs will produce this condition.

Turbinate atrophy alone does not have a great effect on rate of weight gain, but may lead to other complications. Detection of carrier swine is the biggest single problem in controlling this disease.—*W. P. Switzer, D.V.M., Ames, Iowa.*

Demodectic Mange in Dogs

Demodectic mange is essentially a disease of young dogs—the average age of a series of dogs treated in our clinic was 11 months.

Whatever the treatment, it is our belief that its efficacy is enhanced by exposure of the dog to sunlight and by the administration of small doses of estrogen and thyroid extract. It is suggested that a dog of average size be given 1 gr. of thyroid extract daily *per os* for 28 days and 1 mg. of estrogen intramuscularly every other day until 10 doses have been given.—*Gilberto Trevino, D.V.M., College Station, Texas.*

Canine Hip Dysplasia

Owners are inclined to assume that dogs affected with only a slight degree of hip dysplasia are acceptable for breeding. However, any degree of this condition should be the basis for advising against breeding.

It is especially true that male dogs which show almost no discomfort or degree of dysplasia may transmit to their progeny the predisposition to a more severe form of the condition. This is perhaps an example of a dominant hereditary trait with limited penetration.—*Jacques Jenny, D.V.M., Philadelphia, Pa.*

The Surgery of Subcutaneous Tumors in Parakeets (*Melopsittacus Undulatus*)

C. P. GANDAL, D.V.M., and L. Z. SAUNDERS, D.V.M.

New York and Upton, New York

THE POPULARITY of the common shell parakeet as a house pet has led to a greatly increased interest in their care and treatment. Unfortunately, these birds are quite prone to develop various types of tumors.

We have found but nine reports in the literature which deal with tumors of parakeets. In 1923, three cutaneous lipomas were tabulated;⁵ two more were listed in 1933,⁹ and they have been mentioned twice since then.^{3,11} A glioma involving the optic nerve was reported¹ while an abstract of another paper² mentioned three parakeet tumors, but gave no details. It is interesting to note the occurrence of a sarcoma of the subcutis in a parakeet which also had leukosis;⁷ attempts to transmit this tumor to 12 other parakeets were unsuccessful. In a series of 177 parakeet necropsies, a 15.7 per cent incidence of neoplasms was noted,⁹ while another paper dealing with pituitary tumors in these birds was based on 50 cases.¹⁰

Because of the importance of psittacine birds in zoological garden collections and their reputed susceptibility to tumors,^{8,9} it was felt that a knowledge of the clinical handling of such tumors would be valuable. This study was, therefore, commenced using locally available parakeets as the subjects, and was extended to include other privately owned birds as they were referred to us.

The word "tumor" is used in this paper in its broadest sense, since histological study of the growths removed indicated that some of them were not true neoplasms. The distinction cannot always be made during clinical examination (except by biopsy, which is not feasible), hence the use of the term "tumor" in the inclusive sense is justified.

Most intra-abdominal tumors of para-

keets are inoperable because of their inaccessibility and extensive growth by the time they are discovered. On the other hand, the subcutaneous tumors are readily accessible and apt to be discovered at an earlier stage. They usually appear first over the breast muscle and, as they enlarge, may extend in either direction toward the crop or the abdomen (fig. 1, 2). While they are not an immediate threat to the bird's life when discovered, birds so affected frequently stop talking, are languid, unable to fly normally (if at all), and in general cause the owner great concern. With patience and proper technique, these tumors may be successfully removed.

One of our motivations was a desire to achieve recognition of the veterinarian's role in treating pet birds, both on the part of the bird owners and the veterinarians themselves. Many parakeet owners now have their first bird and are not aware that veterinary practice includes avian species. On the other hand, many veterinarians are not yet aware of the tremendous increase of parakeets among the pet population and the impending demand for veterinary service. The majority of our birds were "treated" or "diagnosed" in a pet shop prior to being admitted to the Zoo hospital. When the owners of a pet shop found that veterinary treatment was available and successful, they were usually willing to refer other avian patients.

The surgical technique is within the ability of a proficient veterinary surgeon. It is only necessary to keep in mind the essential differences between avian and mammalian tissues, all of which are aggravated by the small size of the parakeet. These birds cannot afford to lose much blood, yet their vessels are more fragile than mammalian ones, thus complicating the problem of controlling hemorrhage.

Following initial examination, the birds are usually hospitalized for a minimum of 12 hours prior to surgery. This provides an opportunity to observe their behavior

From the New York Zoological Society (Gandal) and the Brookhaven National Laboratory (Saunders).

The portion of this study that was done at Brookhaven was supported by the U.S. Atomic Energy Commission.

Presented before the Sections on Small Animals and Poultry, Ninety-Fifth Annual Meeting, American Veterinary Medical Association, Philadelphia, Pa., August 18-21, 1958.



Fig. 1—Parakeet with fat granuloma on the ventral thoracic midline. The bird and tumor weighed 44 Gm.; the growth, which was successfully removed surgically, weighed 10.9 Gm.

and allows them to adjust to their new quarters. After a car trip, drastic changes in temperature and environment, and the handling occasioned by the initial physical examination, some of the birds were not in condition for major surgery.

The prognosis in any given case is governed by the anamnesis, physical condition of the bird, and by the size, nature, and location of the tumor. Birds that are languid, have extremely large tumors, or are under 30 Gm. in body weight are given a guarded prognosis, as are birds having tumors that appear to be malignant. Those birds that were given a favorable prognosis on initial examination (both in this series and in over 250 subsequent patients) showed a mortality of under 5 per cent.

ANESTHESIA AND OPERATIVE TECHNIQUE

The birds are anesthetized with an intramuscular injection of Equithesin.* The dose varied from 0.22 cc. to 0.25 cc. per 100 Gm. of body weight, the lesser dose being used on the poorer risks and those birds with extremely large tumors. The details of this technique have been described previously⁵ and our total experience with it now embraces over 600 avian patients. After the bird is anesthetized, it is held by an assistant with the legs extended caudally and the neck and head gently pressed

*Equithesin is produced by the Jensen-Saltberg Laboratories, Kansas City, Mo. Each 500 cc. contains 21.3 Gm. of chloral hydrate, 4.8 Gm. of pentobarbital, and 10.6 Gm. of magnesium sulfate in aqueous solution of propylene glycol with 9.5 per cent alcohol.



Fig. 2—Parakeet with typical large lipoma. The bird weighed 44 Gm. and the growth which was successfully removed weighed 11.6 Gm.

against a towel placed on the operating table.

The feathers over the tumor and the surrounding area are plucked out using a quick, jerking motion, removing three or four feathers at a time. The feathers adjacent to the denuded area are covered with a layer of vaseline to keep them flat against the body and out of the operative field; the latter is then thoroughly cleansed with alcohol. Standard aseptic technique is employed throughout the operation.

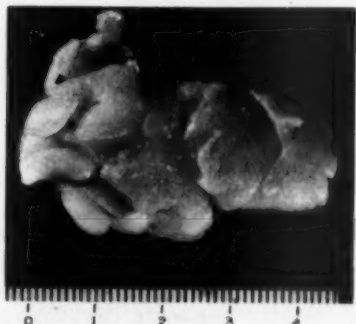


Fig. 3—Lipoma successfully removed from the subcutis in the breast and thoracic inlet in a parakeet. Note the lobulation and the absence of encapsulation (metric scale).

The initial incision, through the skin only, is made with a No. 10 Bard Parker blade. The incision is then lengthened to include the extremities of the mass using a strabismus scissors. This scissors permits much more delicate control than a scalpel and precludes the possibility of incising too deeply. From this point on, each tumor is handled according to its type, location, and vascularity, but the basic technique is similar for all. Blunt dissection with a sterile cotton-tipped applicator, and a non-locking ophthalmic fixation forceps is used to free the tumor. Either end of the applicator serves for dissection purposes and the cotton tip is effective in keeping the field clear of blood. Eye dressing forceps are also an invaluable aid throughout the dissection.

Any large vessels that are encountered are double clamped with Halstead mosquito forceps and divided between the forceps with either a scissors or electrocautery. Some of the smaller vessels may be safely divided using the electrocautery alone.

Extreme caution should be used with the electrocautery needle in the area surrounding the crop. When hemorrhage persists or when vessels are too small or inaccessible to be clamped or cauterized, 0.05 cc. of Thrombozyme** is dropped directly on the affected area. If necessary, a small piece of absorbable gelatin sponge saturated with Thrombozyme may be applied directly over the bleeding area.

The blunt dissection should be done slowly, working first from one approach, then another. Those tumors directly over the pectoral muscle may be dissected out with relative ease. Those over the lower abdominal wall should be freed from the muscular layers leaving the body wall intact (should it be punctured and the peritoneal cavity invaded, a simple continuous suture of plain 000 intestinal gut with an atraumatic swaged-on needle may be used to repair the damage).

Tumors situated anterior to the breast present a problem in that they are usually adherent to part of the crop, which is so thin and membranous it may escape detection. When working on these anterior thoracic inlet tumors, one should proceed quite slowly, positively identifying all

structures as they are encountered. Should the crop be punctured, it may be repaired with a Cushing suture of 5-0 gut with swaged-on needle. In the 2 birds in which this happened, uneventful recovery ensued.

Following removal of the tumor mass and control of hemorrhage, the edges of the skin are sutured with a simple continuous stitch of 000 intestinal gut. Bird skin is quite unlike that of mammals insofar as suturing is concerned, and after trials with simple interrupted and mattress sutures and other materials such as synthetics and silk, the above technique was adopted. We especially prefer the atraumatic swaged-on needle as it induces a minimum of trauma and tearing.

Upon completion of surgery, the bird is placed in a smooth-sided recovery cage where it can be observed until it regains full consciousness.

POSTOPERATIVE CARE

The majority of birds will be able to stand within 90 min. following surgery. Birds that suffer moderate to heavy blood loss during the operation are much slower in regaining consciousness, and we found that administering oxygen at 4 liters per minute for 15 to 30 min. postoperatively would materially lessen the recovery time. Oxygen has also been used to advantage during difficult or long dissections accompanied by excessive hemorrhage, and is credited with saving the lives of several birds.

It is wise to have the bird under intermittent observation for the first three hours following the regaining of consciousness, as some birds have a tendency to pick at the sutures. If this should occur, an Elizabethan collar fashioned of "shirt cardboard" and measuring $1\frac{3}{4}$ inches in diameter, with a $\frac{1}{2}$ -inch hole, may be placed around the bird's neck for the first postoperative week.

Less than 2 per cent of our cases failed to heal by first intention and they involved birds that had been picking at the incision. No systemic or local antibiotics are routinely used.

Birds are discharged on the second or third postoperative day with instructions to keep them alone in their cage for seven days, then return to normal routine.

Within four weeks, new plumage will completely cover the operative site and

**Thrombozyme, a blood coagulant prepared for local application and hypodermic use, is produced by Pitman-Moore Co., Division of Allied Laboratories, Inc., Indianapolis, Ind.

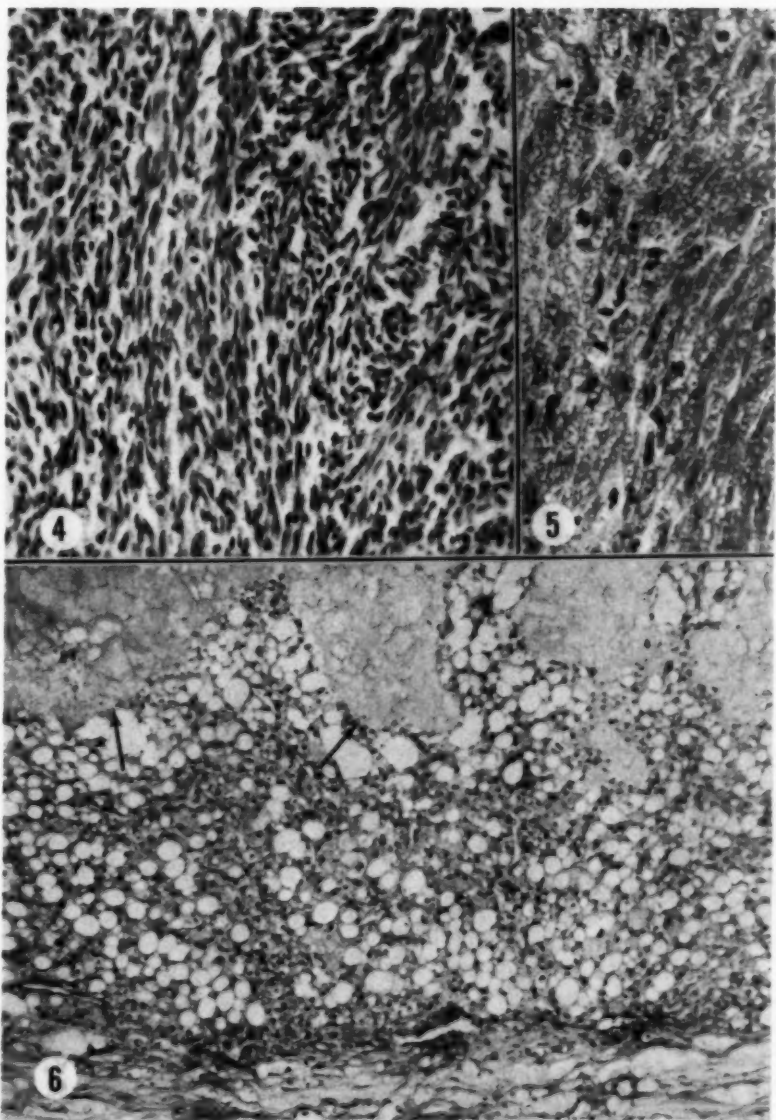


Fig. 4—Histological section of fibrosarcoma of the subcutaneous tissue of the wing of a parakeet.

Fig. 5—High power view of the same tumor showing numerous mitotic figures. The bird died of metastasis to the liver and lungs several weeks following removal of the tumor on the wing.

Fig. 6—Histological section of necrotic lipoma involving the subcutis of a parakeet. The arrows point to areas of necrotic fat. Below them are fat cells infiltrated with leukocytes, and below the fat cells is a thin fibrous capsule.



Fig. 7—Section through a fat granuloma of the subcutis of a parakeet. The growth is surrounded by a fibrous capsule; some skin devoid of feathers overlies the capsule on the right edge of the picture. Inside the capsule are areas of necrotic fat, hemorrhage, and leukocytic, giant cell, and fibroblastic infiltration.

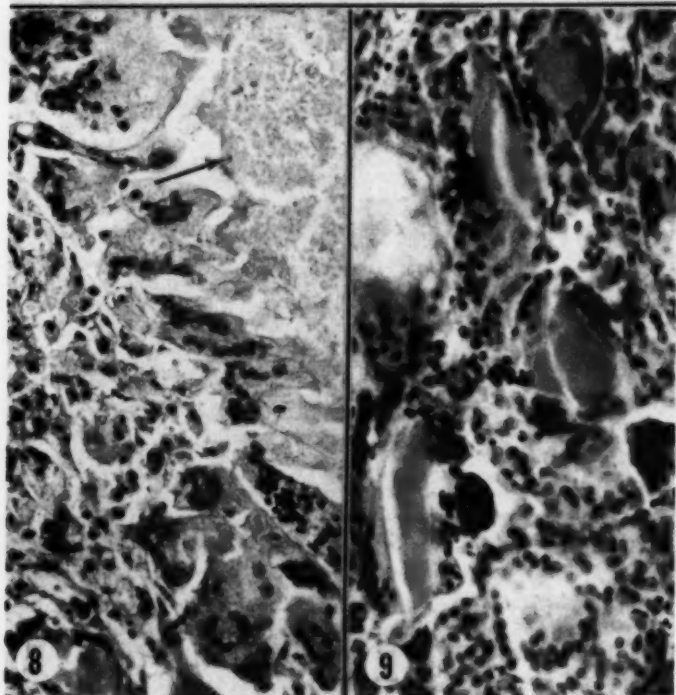


Fig. 8—Histological section of a fat granuloma showing giant cell formation at the edge of an area of necrotic fat (arrow).

Fig. 9—Histological section of a fat granuloma showing giant cells containing necrotic fat.

a gradual return to normal habits is observed.

PATHOLOGY

Forty-five of the tumors were studied histologically. Five of these were cutaneous fibrosarcomas, one of which had metastasized and caused death of the bird a few weeks following the operation (fig. 4, 5). With one exception, found on the breast, these were located on the wing or the thigh. During clinical examination, the fibrosarcomas could usually be distinguished from the lipomas by their denser consistency and from the necrotic lipomas and lipogranulomas by their lack of encapsulation.

Eighteen of the tumors were lipomas. These, while usually not encapsulated, were lobulated, yellowish, greasy on cut section, and occasionally very large (fig. 2, 3). The histological structure of the lipomas was essentially that of normal fat, and the diagnosis of neoplasia was made on the basis of the gross extent of the lesion rather than on any microscopic abnormalities. In four of the lipomas, the fatty tissue was diffusely infiltrated by mononuclear leukocytes and a few erythrocytes. The pectoral site of the growths is the same as that in which lipomas frequently occur in old dogs.

Fourteen of the growths were classified as lipomas with necrosis. These were enclosed in a thin fibrous capsule, and contained varying amounts of necrotic fat and hemorrhage in the center of the growth; the periphery usually consisted of fat cells and hemorrhage (fig. 6).

Eight of the growths were classified as fat granulomas. These were usually enclosed in a thick fibrous capsule, which was often quite vascular, inside of which was an amorphous mixture of fat cells, necrotic fat, cholesterol crystals, blood pigment, and giant cells containing phagocytosed fat globules (fig. 1, 7-9). Three of the granulomas contained considerable fibrous tissue. In a few cases, there was ulceration of the capsule and bacterial growth in the superficial portion of the tumor, but bacteria were not observed within the giant cells. These granulomatous lesions had many features in common with those produced by the experimental injection of mineral oil into rats.⁴

In seeking an explanation for the lipomas with necrosis, we considered it likely that

the dependent location of the tumors rendered them subject to frequent trauma, and that the hemorrhage and necrosis were consequent to disruption of the capillary blood supply.[†] Whether or not this theory is correct, we believe that the fat granulomas were formed as a foreign body reaction against the necrotic fat.

The lipomas, necrotic lipomas, and fat granulomas would then be three successive stages of a process that began with the former and ended in the latter. To remove this theory from the wholly speculative state, we attempted to correlate the type of lesion with the history of its duration. Unfortunately, we were unable to get enough reliable histories to either establish or refute our theory. The occurrence of several very large lipomas without necrosis in our series might seem to weaken our hypothesis of traumatic causation; however, these may have been in birds which were not at liberty to fly. We know that once the growths become large the birds exhibit reluctance to fly.

If other workers can obtain affected birds for experimental purposes, an interesting approach might be to see, by periodic biopsy examination, whether the lipomas progress into the other two types of lesions. The benign histological nature of the growths (except for the five fibrosarcomas) accounts for the favorable prognosis in most instances of cutaneous tumors in parakeets, provided the surgical technique is satisfactory.

We might mention in passing that we have seen 3 cases of cutaneous fat granulomas in parrots and 2 in domestic ducks during the course of this study, indicating that birds are perhaps more prone to this condition than mammals.

DISCUSSION

The distress and clinical symptoms caused by these growths were none the less real for their benign nature, and it is important that veterinarians become familiar with this surgical problem in parakeets for the benefit of the birds, the client, and the veterinary profession. Not all of the tumors encountered will fall into the oper-

[†]In one rather large lipoma, a small area of fat necrosis and giant cell formation was seen in the center of the growth. Since there was no hemorrhage or inflammation in the peripheral fatty tissue, trauma was excluded, and the possibility considered that the center of the tumor had outgrown its scanty blood supply.

able category; but both personal satisfaction and credit to the profession can be derived from restoring the latter type of patient to its owner in good health.

SUMMARY

A series of 45 external growths in parakeets was studied from the standpoint of surgical approach and histopathological features. Of these, five were fibrosarcomas, 18 were lipomas, 14 were necrotic lipomas, and eight were fat granulomas. Among the cases given a favorable prognosis on initial examination, the postoperative survival was better than 95 per cent.

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Closed-Circuit Halothane Anesthesia in the Dog

A Report of 142 Anesthetic Periods

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HALOTHANE,* a new volatile anesthetic, has received considerable attention in the medical literature in the past two years.¹⁻¹⁴ Recently, 100 animals of various species were anesthetized with this drug at the University of Cambridge.⁵ Because of certain potential advantages possessed by this agent, a clinical trial was undertaken at the College of Veterinary Medicine, Colorado State University.

REVIEW OF LITERATURE

Halothane is a clear, colorless, volatile liquid with a nonirritant odor. Its chemical formula is 2-bromo-2-chloro-1:1:1-trifluoroethane (CF₃CHClBr). It has a boiling point of 50.2 C. at 760 mm.

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The author thanks Dr. Lloyd C. Moss, Colorado State University, for obtaining the picture.

*The halothane used in this study was supplied by Fort Dodge Laboratories, Fort Dodge, Iowa, as Fluothane which is manufactured by Imperial Chemical Industries, Ltd., Manchester, England.

Hg., specific gravity of 1.86 at 20 C., and vapor pressure of 243 mm. Hg. at 20 C.¹⁰ Some decomposition occurs when it is exposed to light but the liquid is stabilized by the addition of 0.01 per cent (w/w) thymol and storage in amber glass bottles. It is unaffected by warm soda lime and can be used in closed-circuit systems. Halothane is nonexplosive and noninflammable when mixed in high concentrations with oxygen.

This drug has been administered by open mask and open circuit methods. With the former, it was difficult to control the level of anesthesia, since small changes in the concentration of the agent markedly changed the depth of anesthesia. It has also been employed in closed-circuit equipment. One writer used a Boyle's apparatus (British) in his study, the anesthetic being delivered to the patient either by face mask or endotracheal catheter. Induction was accomplished by direct administration of halothane vapor or by intravenous injection of thiopental.⁸

Halothane vapor in concentrations of 2.0 to 4.0 per cent (v/v) is reported to produce stage III, plane II-III anesthesia in dogs and monkeys in two to five minutes.¹⁰ Surgical anesthesia was maintained by inhalation of 0.8 to 1.2 per cent mixtures, depending on whether preanesthetic agents

were administered. On this basis, it was estimated that halothane was about twice as potent as chloroform and four times as potent as diethyl ether. Recovery occurred rapidly and, with prolonged anesthesia, was complete in ten to 20 minutes.

Using mice, the anesthetic coefficient₅₀ (a.c.₅₀) and the lethal coefficient₅₀ (l.c.₅₀) of halothane and other common inhalation anesthetics were com-

parative movements are decreased with halothane. Inhalation of high concentrations produces apnea. This is said to be easily reversible,¹⁰ but several deaths in dogs and monkeys have been reported.⁹

Salivary, mucous, and bronchial secretions are absent during halothane anesthesia in man and animals.^{6,7} One author¹⁰ stated that no dogs or mon-

TABLE 1—Summary of Age, Sex, Weight, Breed, and Physical Status of Dogs Prior to Anesthesia with Halothane

Age in years	No. of dogs	Weight (lb.)	No. of dogs	Sex	No. of dogs	Breed	No. of dogs	Physical status ^a	No. of dogs
Less than 1	22	Less than 5	1	Male	62	Mixed	62	1	42
1-2	18	6-10	5	Castrated male	5	Cocker Spaniel	16	2	68
2-3	7	11-15	9	Female	43	German Shepherd Dog	7	3	24
3-4	7	16-20	9	Spayed female	32	Boston Terrier	6	4	7
4-5	6	21-30	33			Springer Spaniel	5		
5-6	13	31-40	27			Collie	5		
6-7	5	41-50	25			Boxer	5		
7-8	10	51-60	18			English Setter	4		
8-9	10	61-70	10			Beagle	3		
9-10	6	Over 71	5			Greyhound	3		
10-12	9					Dachshund	3		
12-15	6					Pekingese	3		
16-17	1					Fox Terrier	2		
Unknown age	22					Mastiff	2		
						Coonhound	2		
						Other purebred	14		
Total	142		142		142		142		142

^a1—healthy (e.g., presented for spaying, castrating, ear trimming); 2—disease with no systemic reaction (e.g., lacerations, fractures, foreign bodies); 3—disease with mild systemic reaction (e.g., low fever, slight dehydration, weight loss, or anemia); 4—disease with severe systemic reaction (e.g., high fever, severe dehydration, anemia, shock, or cachexia—includes all moribund animals).

puted by the same author. He found the a.c.₅₀ for halothane was lower than all others except trichlorethylene. The l.c.₅₀/a.c.₅₀ ratio was 3:3 as compared with 1:7 for ether and 1:5 for chloroform. More recently, exception has been taken to these figures.⁶

The action of this gas on the cardiovascular system is somewhat controversial. All authors agree that a definite hypotension is produced. One¹⁰ stated that the cardiac output is unchanged and the rate decreased. He attributed the lowered blood pressure primarily to splanchnic vasodilation, probably due to sympathetic ganglion block. In dog heart-lung preparations, others¹ found that halothane depressed the myocardium and reduced cardiac output in direct proportion to the concentration used. They also believed that the hypotension produced was not due to block of autonomic ganglia but rather to a direct depressant action on the vasomotor center.

Bradycardia follows the administration of halothane in man. This can be counteracted by atropine and its administration is advised. The heart is sensitized to intravenous adrenalin, and ventricular fibrillation may follow its use. Various authors^{2,7} have commented on the complete absence of the shock syndrome in both man and animals anesthetized with the gas.

In dogs, both the amplitude and frequency of

keys vomited during or after anesthesia, while another reported one instance.⁶

No pathological changes were found in the livers of animals anesthetized for long periods. Liver and kidney function tests remained unaltered.¹⁰

TABLE 2—Preanesthetic and Anesthetic Agents Used with Halothane

Halothane alone	1
Morphine-atropine-thiamylal sodium (Surital*)	123
Atropine-thiamylal sodium	4
Promazine hydrochloride (Sparine**) atropine-thiamylal sodium	1
Chlorpromazine hydrochloride (Thorazine†) atropine-thiamylal sodium	1
Perphenazine (Trilafon‡)-thiamylal sodium	1
Chlorpromazine-thiamylal sodium	3
Promazine-thiamylal sodium	1
Morphine-atropine pentobarbital sodium	3
Pentobarbital sodium	1
Morphine-atropine-thiopental sodium-pentobarbital sodium (Combuthal§)	2
Morphine-atropine-thiopental sodium (Pentothal§)	1
Total	142

¹In this study, morphine and atropine were given subcutaneously at least 30 minutes prior to induction of general anesthesia. *Surital is produced by Parke, Davis and Co., Detroit, Mich.; **Sparine by Wyeth Laboratories Inc., Philadelphia, Pa.; †Thorazine by Smith, Kline and French Laboratories, Philadelphia, Pa.; ‡Trilafon is produced by Schering Corp., Bloomfield, N. J.; §Combuthal and Pentothal by Abbott Laboratories, North Chicago, Ill.



Fig. 1—Administration of halothane by means of an Iowa model Foregger gas machine.

CLINICAL STUDY

This study was made from September, 1957, to March, 1958. Dogs anesthetized included those presented for surgery at the Colorado State University veterinary hospital and pound animals. The pertinent data concerning age, sex, weight, breed, and physical status prior to anesthesia are summarized (table 1). In this table, the term "physical status" is not synonymous with "surgical risk."

In all instances, halothane was administered by an Iowa model Foregger* gas machine (fig. 1), a closed-circuit apparatus utilizing soda lime for carbon dioxide absorption. Various combinations of pre-anesthetic and anesthetic agents were employed (table 2). After the animal was anesthetized, an endotracheal catheter was

forming the operative procedure was recorded (table 3).

During anesthesia, an anesthetist was in constant attendance. This enabled a rapid change in the depth of anesthesia if required. The operations performed are tabulated (table 4). Two operations were performed on 7 dogs during one anesthetic period. Of the 117 dogs anesthetized, 14 were anesthetized twice; 4, three times; and 1, four times.

At termination of the operation, the re-breathing bag was emptied and the system filled with oxygen. This was repeated several times, with an interval of several respirations intervening, to "blow off" the anesthetic agent. In dogs which aroused rapidly, the endotracheal catheter was removed in the operating room; otherwise, it was left in position until the swallowing reflex returned.

The dog was considered to have recovered from anesthesia when it regained its righting reflex. Deaths which occurred during the period from induction of anesthesia to recovery of the righting reflex were considered to be due to anesthesia. The duration of anesthesia is listed (table 5). During the 142 anesthetic periods, surgery was conducted for less than one hour in 48; one to two hours in 59; two to three hours in 27; three to four hours in 7; and four to five hours in one.

The 1 animal which died was to have

TABLE 3—Person Administering Anesthetic and Performing Surgical Procedure

	By staff veterinarian	By senior student
Number of anesthetic periods	4	138
Number of animals operated	64	78
Number of operations	69	80

inserted and the gas alone used as a maintenance agent. The experience level of the person or persons responsible for induction and maintenance of anesthesia and for per-

*The Foregger Company, Inc., New York, N.Y.

TABLE 4—Operations Performed Under Halothane Anesthesia

Thoracotomy	29
Ovariohysterectomy	
For sterilization	15
For disease	5
Orchiectomy	
For sterilization	3
For disease	3
Drainage, external ear	5
Enterocanastomosis	24
Excision of skin tumor, cyst, or inflammatory lesion	14
Mastectomy	7
Amputation of limb	2
Pulmonary lobectomy	2
Herniotomy	6
Fistula, excision	5
Tonsillectomy	2
Cystic calculi, removal	2
Entropion	3
Miscellaneous	22
Total operations	149

been spayed and appeared to be in excellent condition prior to anesthesia. She was given morphine and atropine subcutaneously, followed in 45 minutes by intravenous thiamylal sodium. Shortly after administration of halothane, she developed apnea. No heartbeat could be detected, so an emergency thoracotomy was performed to permit heart massage. The thorax was closed after the beat had been re-established. Despite supportive treatment, the dog expired approximately eight hours postinduction. At necropsy, the lungs and kidneys were passively congested and there was hemorrhage in the pleural and pericardial cavities. Death appeared to be due to anesthetic and surgical shock.

DISCUSSION

With any anesthetic agent, considerable experience is necessary to achieve optimum results. The one death in this study occurred early in the series before the potency of the drug was fully appreciated.

Apnea, which frequently developed, was noticed particularly on induction but occasionally later during the course of anesthesia. In all animals but the 1 which died, apnea was reversed by emptying the system of anesthetic agent and manually inflating the lungs with oxygen for a short time. This procedure, however, did not contribute to smooth anesthesia.

Anesthetized dogs had hyperemic mucous membranes, particularly noticeable in the tongue; however, an abnormal amount of hemorrhage in the operative field could not be detected. Four dogs showed evidence of

TABLE 5—Duration of Anesthesia

Duration	No. of dogs
Less than 1 hour	8
1 to 2 hours	34
2 to 3 hours	43
3 to 4 hours	29
4 to 5 hours	14
5 to 6 hours	7
6 to 7 hours	2
7 to 8 hours	1
9 to 10 hours	2
18 to 19 hours	1
Total	141*

*One animal died without recovering a righting reflex.

shock and required whole blood transfusion or metarminol bitartrate (Aramine®) intravenously, or both. Respectively, the 4 dogs were being subjected to the following surgical procedures: ovariohysterectomy, cesarotomy-ovariohysterectomy, pulmonary lobectomy, and resection of an extensive fistulous tract. In addition, 13 other dogs received whole blood transfusions. Two of these were given metarminol bitartrate and 4 had dextrose infusions during the surgical procedure.

In general, good anesthesia was obtained with halothane. Muscle relaxation was adequate for major abdominal and thoracic surgery; nausea and vomiting were not observed in any of the animals; and recovery from anesthesia was usually rapid and not attended by struggling.

Halothane is so potent that the usual closed-circuit apparatus for inhalation anesthetics is incapable of safely controlling the concentration, according to several anesthesiologists.^{2,13,14,15} For this reason, they recommend using special apparatus for its administration. Because it is an ideal agent from the explosion standpoint of explosion hazard, its use by veterinarians could become widespread provided such apparatus becomes available.

SUMMARY

A clinical study of halothane anesthesia in the dog was undertaken. One hundred forty-two anesthetic periods were conducted with the drug and various surgical operations performed. It proved to be a potent anesthetic agent, producing satisfactory anesthesia and muscle relaxation. One dog in the series died.

*Produced by Merck, Sharp and Dohme, Philadelphia, Pa.

Clinical Data

Bovine Respiratory Infections. I. Psittacosis-Lymphogranuloma Venereum Group of Viruses as Etiological Agents

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TERMINOLOGY CONCERNING respiratory infections of cattle leaves much to be desired.¹⁻⁴ In order to define and describe such infections, proper knowledge of the causative factors is important.²²

Bacteria of the genus *Pasteurella* have been found in lungs of apparently "normal" cattle⁹ and in lungs of cattle dying of a respiratory infection called "shipping fever" (formerly called "hemorrhagic septicemia").^{6,15} Pleuropneumonia-like organisms have also been isolated from pneumonic bovine lungs.^{6,7,12}

Attempted transmission of pneumonia in calves by the use of filtered and unfiltered material, or bacterial agents, has produced varying results.^{6,9,10,12,20} The existence of animals preinfected with an enzootic pneumonia has been emphasized.^{9,20}

Viral agents have been suspected^{13,14,25} and isolated^{16,18,21} from cattle that had pneumonic lesions at necropsy.

Viral agents of the Psittacosis-lymphogranuloma venereum (P-LV) group can produce pneumonic lesions in mammals and birds.^{5,18,26} Animals or birds can harbor these large viruses as latent infections which, when proper host conditions prevail, may develop into overt infection.

The following investigations give some suggestive evidence concerning the disease-producing potentialities of the P-LV group of viral agents in cattle. An agent having the characteristics of this group of viral agents was also isolated from the nasal secretions of a calf that had clinical evidence of respiratory infection.

MATERIALS AND METHODS

Crude Lung Preparations.—Crude materials used in these studies were prepared by grinding pneumonic lung tissues, either in a Ten Broeck grinder or Waring blender, to form a 10 per cent saline

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suspension. Low-speed centrifugation (1,000 r.p.m. for 15 min.) was used to settle the coarse particles. No antibiotics were added. The sources were as follows.

Case K-46.—This calf was in a group of animals that had been purchased and transported to a feedlot, July 11, 1956. Eleven days later, it developed clinical signs diagnosed as "shipping fever." At the time of examination, it was prostrate, had a temperature of 108 F., and died shortly thereafter. Necropsy revealed a line of demarcation between normal and pneumonic lung tissue. Lung consolidation involved approximately the anteroventral half of both lungs. There was approximately 1 gallon of reddish brown, flocculent fluid in the thoracic cavity. No *Pasteurella* organisms were found on bacteriological examination.

Case K-918.—This 6-month-old dairy calf showed labored respiration and anorexia on March 11, 1957, and died after 48 hours of illness. Necropsy revealed a confluent bronchopneumonia involving the anteroventral third of both lungs (fig. 1). *Pasteurella* organisms were not isolated.

Case W-1 to 4.—These 4 calves died in October, 1956, within 48 hours after the first clinical signs of a respiratory infection.²³ The pneumonic process was extremely severe. There was evidence of a fibrinous pleuritis and almost complete solidification of the lungs. Lung tissues from these animals were combined to form a composite sample.

Case CA-3.—This calf showed typical signs of an acute respiratory infection after weaning in October, 1957. It was killed for necropsy two days after clinical signs were recognized; pneumonic lesions were found (fig. 2).

Bacteria.—The bacteria used in these experiments were two strains (W-2 and CA-3) isolated from the lungs of calves W-2 (1956) and CA-3 (1957) which were from the same premises but which died one year apart. Morphologically and biochemically, both strains corresponded closely to *Pasteurella hemolytica*.

For use in animal transmission studies, bacteria were isolated in pure culture on blood agar plates, then grown in brain heart infusion (BHI) broth (Difco) for 12 hours. The bacteria and culture fluids were used for intratracheal inoculation of cattle.

Nonbacterial Agents.—SBE.—This agent was isolated from the spleen of a calf that had shown clinical signs, as well as gross and microscopic lesions of sporadic bovine encephalomyelitis (SBE). Isolation was accomplished by inoculation of 10 per cent saline suspension of spleen into the yolk sac of 7-day chicken embryos. Nonbacterial embryo deaths occurred eight days following inoculation.

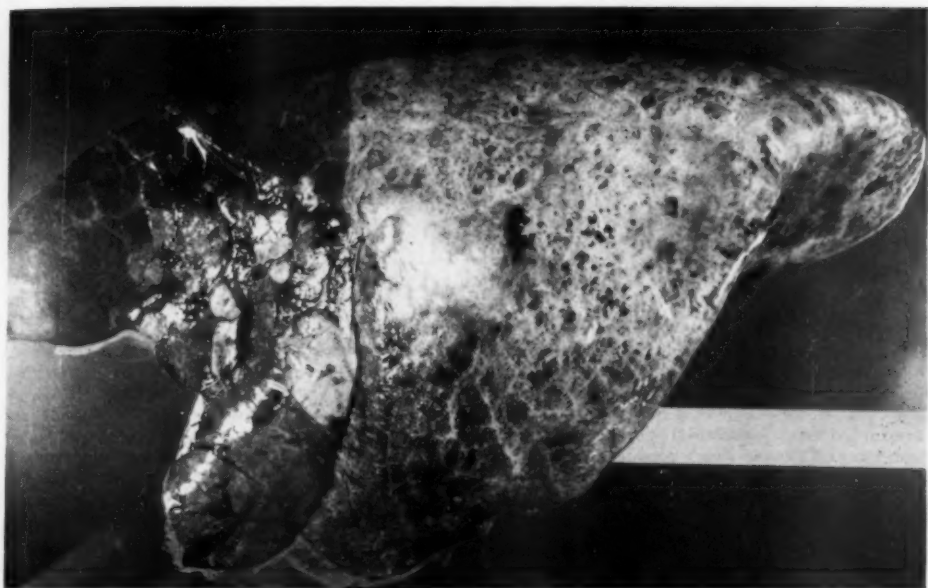


Fig. 1—Lungs from calf K-918 showing bronchopneumonia and emphysema.



Fig. 2—Thoracic cavity of calf CA-3 showing pneumonic lungs (arrows).

TABLE 1—Results of Intratracheal Inoculation of Normal Animals and Animals Given Cortisone Acetate

Calf	Cortisone acetate* (2 Gm./day, 4 days)	Intratracheal inoculum (10/13/56)	Days from inoculation until temperature 104° F. or above	Highest temper- ature next two weeks	Days 104° F. or above
175	None	Saline solution	-----	102.8	-----
178	None	Saline solution	-----	103.2	-----
333	Yes	Saline solution	-----	103.2	-----
5437	Yes	Saline solution	-----	103.5	-----
5435	Yes	K-46**	7	104.6†	3
5436	Yes	K-46**	8	105.9†	2

*Supplied by Merck Sharp & Dohme, Philadelphia, Pa.; **10 per cent saline suspension of lung material from calf K-46; †no other clinical signs.

This agent was carried through chicken embryos for 44 passages, with death of the embryos occurring consistently between the fourth and sixth days.

Intraperitoneal inoculation of this agent into guinea pigs (200-400 Gm.) produced a febrile response (104 F. or above), usually lasting three to four days, and a concomitant loss of weight. Necropsy of the guinea pigs revealed an increased peritoneal fluid and a fibrinous coating of the enlarged friable livers and spleens. On subsequent transfers of bacterial-free spleen and liver suspensions into other guinea pigs, the same lesions were reproduced. Control inoculation of spleen and liver material from normal animals in the guinea pigs in this colony failed to reveal any latent infectious agent. In egg transmission work, streptomycin was used as an antibiotic agent in a concentration of 5 mg. per milliliter. Penicillin (200 units/ml.) inhibited the activity of this agent. Mice did not show signs or lesions of infection following intranasal or intraperitoneal inoculation of this agent.

Minute elementary bodies possessing the structure and tinctorial properties of agents belonging to the Psittacosis-lymphogranuloma group of viral agents were observed in impression smears made from the peritoneal fluids and liver surfaces of guinea pigs and cells of the chicken embryo yolk sac when stained with Macchiavello's stain.²¹



Fig. 3—Left lung of calf given saline suspension of pneumonic lung (calves W 1-4) material and killed for necropsy two weeks later, showing large consolidated area.

YFV.—This agent was isolated from the feces of cattle that were considered normal and healthy. Guinea pigs inoculated intraperitoneally with a 10 per cent saline suspension of fecal material exhibited signs and lesions resembling those previously described.²⁰ These signs and lesions were the same as those described for SBE virus, and were produced on original inoculation and subsequent transfer. Following the isolation of this agent in guinea pigs, the yolk sacs of 7-day chicken embryos were inoculated with this material. At the thirtieth-passage level, embryos died between the fourth and sixth days. This agent was resistant to streptomycin and susceptible to penicillin.

BE-122.—This was a bovine enterovirus (BE) isolated from the feces of cattle that had exhibited a temperature rise, nasal exudate, and slight cough one week following purchase and movement to new surroundings.²⁰ Neither penicillin nor streptomycin inhibited its growth in tissue culture.

CA-315.—This was an agent isolated from bovine nasal discharge by yolk sac inoculation of developing chicken embryos. This nasal exudate was collected from a calf during the clinical and thermic phase of a bovine respiratory infection that occurred after weaning in the fall of 1957.²⁰ Chicken embryos, when inoculated with twelfth-passage yolk sac suspension, died between the fourth and sixth days. Guinea pigs, when inoculated intraperitoneally with this yolk sac material, showed temperature response, loss of weight, a bacteria-free fibrinous peritonitis, and enlargement of the liver similar to that described for the SBE agent. Mice showed no signs or lesions of disease following the intranasal instillation or intraperitoneal inoculation of yolk sac material. This agent, like agents SBE and YFV, was resistant to streptomycin and susceptible to penicillin.

EXPERIMENTAL PROCEDURES AND RESULTS

Six experiments were conducted between October, 1956, and October, 1958, to determine the effect of an intratracheal injection of calves with several different inocula. In one instance, this was done in artificially (cortisone) "stressed" animals.

All inocula were administered intra-

tracheally as either a 10 per cent saline suspension or BHI broth culture. Volume was adjusted so that each animal was given 10 ml. of a single inoculum or 5 ml. each when two inocula were used.

Animals used in these experiments were beef-type calves that weighed between 200

solution and injected intramuscularly in four divided doses, given at 24-hour intervals. Forty-eight hours after the last dose, the calves were given the various inocula.

The 4 calves given saline solution with or without cortisone did not exhibit an abnormal temperature rise or clinical signs of

TABLE 2—Results of Intratracheal Inoculation of Calves with a Viral Agent and *Pasteurella Hemolytica* Separately or Combined, and with Crude Lung Material, in an Attempt to Produce Bovine Pneumonia

Calf	Inoculum (2/26/57)	Days from inoculation until temperature 104 F.	Highest temperature (F.)	Days 104 F.	Inoculum (3/27/57)	Days from inoculation until temperature 104 F.	Highest temperature (F.)	Days 104 F.	Remarks
327	C. E.*	.....	103.0	.....	K918#	.....	103.2	.....	.....
329	C. E.	.....	103.0	.....	K918	.....	103.0	.....	.....
328	BHI broth**	.....	102.6	.....	SBE plus Past. hemolytica	3	105.2	10	2 tem. peaks @ 11-day interval
330	BHI broth	.....	103.2	.....	SBE plus Past. hemolytica	7	104.6	3	.....
334	Past. hemolytica†	1	104.6	2	SBE plus Past. hemolytica	2	105.2	6	.....
335	Past. hemolytica	.....	103.0	.....	Past. hemolytica SBE plus	2	104.6	2	.....
336	SBE‡	.....	103.4	.....	SBE plus Past. hemolytica	2	104.2	1	.....
339	SBE	10	104.4	3	SBE plus Past. hemolytica	.....	103.4	.....	.....
337	SBE plus Past. hemolytica	2	105.4	7	Past. hemolytica SBE plus	.....	102.4	.....	.....
338	SBE plus Past. hemolytica	2	105.0	4	Died 6 days after first inoculation	.....	.....	.....	.....

*C.E.—10 per cent yolk sac suspension from normal chicken embryos incubated for 12 days; **BHI broth—brain heart infusion broth (Difco); †a 12-hour BHI broth suspension of *Pasteurella hemolytica* recovered from the lungs of animal W-2; ‡SBE—third-passage 10 per cent yolk sac suspension containing an agent having the characteristics of sporadic bovine encephalomyelitis (SBE) virus; #K918—crude lung material from calf K-918.

and 500 lb. Clinical observations were made and temperature readings were recorded for at least two weeks before the animals were used in an experiment.

Experiment 1.—Six calves were used. Two were to determine the effect of an intratracheal injection of saline solution; 2 to see if prior stressing with cortisone acetate would influence the effect of the intratracheal administration of the saline solution; and 2 to determine the effect of an intratracheal injection of crude lung material into animals that had been given cortisone (table 1).

In the latter, where cortisone was used as a stressing agent to reduce their resistance to infection, 2 Gm. of cortisone acetate were suspended in 20 ml. of saline

disease. The 2 calves given cortisone, and 48 hours later given crude lung material from a clinical case of bovine pneumonia, developed a rise in temperature but no clinical signs of respiratory infection.

Experiment 2.—Two calves were given, intratracheally (Nov. 7, 1956), a 10 per cent suspension of lung material obtained from 4 calves (W 1-4) that died of typical pneumonia. These 2 healthy-appearing calves had been observed for at least one month before they were used for experimental purposes. Their temperature readings had varied from 99.6 to 104.0 F., depending on the stage of excitement and surrounding environment.

Within 48 hours following injection of the crude lung material, both calves de-

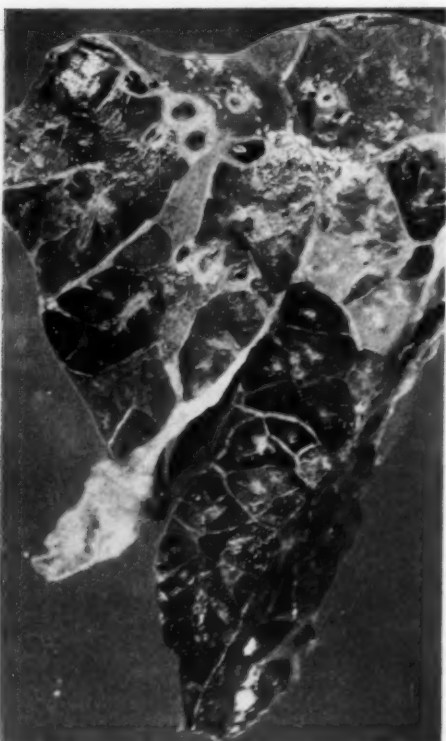


Fig. 4—Cross section of the lung from a calf that died six days after an intratracheal injection of sporadic bovine encephalomyelitis (SBE) virus plus *Pasteurella hemolytica* bacteria.

veloped temperatures above 104 F. as well as clinical evidence of respiratory distress with excessive mucopurulent nasal discharge, excessive lacrimation, and coughing.

Two weeks following inoculation, the temperatures, appetites, and activities of both had again become normal. One calf was killed for necropsy and the anteroventral third of the lungs was found consolidated (fig. 3).

Experiment 3.—Ten calves were used in this experiment to determine the effect of intratracheal inoculation of *Past. hemolytica* alone and in combination with SBE virus as possible agents in the production of bovine pneumonia. Two calves were inoculated with each of the following agents: normal chicken embryo yolk sac material; BHI broth; 12-hr. BHI cultures of *Past. hemolytica* from calf W-2; third-pass SBE virus; and a combination of the bacteria and virus.

The results of experiments 3 and 4 are tabulated jointly (table 2). There appeared to be no reaction from the intratracheal injection of either yolk sac material from normal 12-day chicken embryos or BHI broth.

Following the injection of the 12-hour BHI suspension of *Past. hemolytica*, there was a temperature rise to 104 F. or above for two days in 1 calf, but no apparent effect in the other.

The intratracheal inoculation of third-

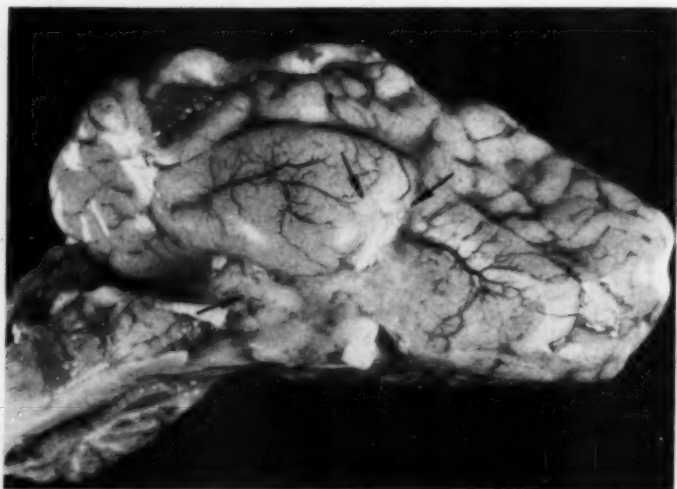


Fig. 5—Brain of same calf (see fig. 4) showing purulent meningitis (arrows) found in conjunction with the pneumonia produced by the intratracheal inoculation of SBE virus and *Pasteurella hemolytica*.

passage SBE virus failed to elicit a temperature response in 1 calf but the other showed a temperature rise above 104 F. on the tenth day, with another "spike" above 104 F. eight days later.

Experiment 4.—Approximately one month after inoculation of the 10 calves in experiment 3, 7 of the remaining 9 were challenged with the SBE virus and *Past. hemolytica* combination. In addition, an-

TABLE 3—Results of Intratracheal Inoculation of Calves with Three Viral Agents, and *Pasteurella Hemolytica* Alone or in a Combination, and with Crude Lung Material, in an Attempt to Produce Bovine Pneumonia

Calf	Inoculum (4/16/58)	Highest temperature (F.)	Days 104 F.	Inoculum (6/23/58)	Days from inoculation until temperature 104 F.	Highest temperature (F.)	Days 104 F.
357*	<i>Past. hemolytica</i> ** plus BE-122***	103.0	—	SBE†	1	106.2	3
358	<i>Past. hemolytica</i> plus BE-122	102.8	—	SBE	2	105.0	2
359	<i>Past. hemolytica</i>	102.8	—	YFV‡	1	105.4	3
362	<i>Past. hemolytica</i>	102.6	—	YFV	—	103.8	—
360	CA-3†	102.8	—	SBE plus <i>Past. hemolytica</i>	—	103.2	—
364	CA-3	103.0	—	SBE plus <i>Past. hemolytica</i>	—	103.4	—
361	BE-122	102.8	—	YFV plus <i>Past. hemolytica</i>	1	104.2	2
363	BE-122	103.0	—	YFV plus <i>Past. hemolytica</i>	1	106.8	3

*A bovine enterovirus was isolated from the feces of all 8 animals 1/28/58, prior to first inoculation;

strain of a *Pasteurella hemolytica* isolated from the lungs of calf CA-3; *BE-122-bovine enterovirus isolated by Dr. Moll;†CA-3-10 per cent suspension of crude lung material from calf with signs of pneumonia; ‡SBE-tenth-passage 10 per cent yolk sac suspension of an agent having the characteristics of sporadic bovine encephalomyelitis; §YFV-agent isolated from the feces of normal animals.

The calves inoculated simultaneously with *Past. hemolytica* and SBE virus developed clinical signs of respiratory infection. Calf 337 was lethargic 24 hours after inoculation and rales were discernible by auscultation from the fourth through the sixth days. Calf 338 also became lethargic in 24 hours. Although it did not show a posterior paralysis, it was reluctant to stand or move about. By the fourth day, there was increased salivation and a catarrhal nasal discharge. The respiratory involvement became more pronounced, as evidenced by rales, increased dyspnea, depression, extension of the head, and dilatation of the nostrils until death on the sixth day.

Necropsy disclosed a severe confluent bronchopneumonia and fibrinous pleuritis (fig. 4), as well as gross evidence of purulent meningitis (fig. 5). Subsequent bacteriological examination disclosed a pure culture of *Past. hemolytica* from both the brain and lungs.

other attempt was made to transmit or reproduce bovine pneumonia in 2 of the calves by the injection of crude lung material from a calf that died of respiratory infection (table 2).

The administration of crude lung material (K-918, table 2) to these 2 calves failed to produce either a rise in temperature or clinical change.

Again the injection of the combined virus and bacteria in 2 calves, previously given only BHI broth, resulted in fever and clinical evidence of respiratory infection; i.e., cough, some respiratory difficulty, and rales on auscultation.

The 2 calves that had previously been given a BHI broth culture of *Past. hemolytica* both exhibited clinical signs of respiratory infection and a rise in temperature when challenged with the virus-bacteria combination. One reacted more markedly than the other.

The 2 calves that had been given a prior injection of SBE virus remained essentially

normal. One did have a temperature of 104.2 F. on the second day postinoculation.

Calf 337, that had survived the original inoculation of virus and bacteria, was not affected by challenge with similar material approximately one month later.

Experiment 5.—The 8 calves used in experiments 5 and 6 (table 3) were purchased Nov. 24, 1957. When it was first possible to take their temperatures, six of the eight were above 104.0 and one was 106.4 F. On Jan. 28, 1958, all of these calves were apparently healthy with temperatures within normal range (101.0–103.0 F.); nevertheless, tissue culture isolations disclosed that they were shedding bovine enterovirus (BE) in their feces.¹⁹

Pairs of calves were injected in a pattern designed to determine the pathogenicity of an intratracheal injection of BE-122 virus by itself and in combination with *Past. hemolytica*. In addition, 2 calves were given crude lung material from a calf that was killed for necropsy during the high temperature, severe clinical phase of a respiratory infection that followed weaning.²⁴

Neither intratracheal inoculation of BE-122 virus alone, this virus combined with *Past. hemolytica*, *Past. hemolytica* alone, or crude lung material elicited a temperature rise in these experimental animals.

Experiment 6.—Challenge inoculations of the same calves used in experiment 5 were made to determine if the initial temperature rise was accompanied by an immunity to viral agents of the P-LV group. Viruses SBE and YFV were each used alone and in combination with *Past. hemolytica* on 2 calves (table 3).

The 2 calves which had been resistant to an inoculation with BE-122 virus were susceptible to SBE virus approximately two months later.

Prior inoculation with *Past. hemolytica* did not produce an immunity to an intratracheal inoculation of the YFV agent.

It would appear that prior administration of crude lung material, though it did not produce a reaction in the 2 calves, made them resistant to subsequent administration of SBE virus and *Past. hemolytica*.

The 2 calves that were given BE-122 virus and subsequently challenged with YFV plus *Past. hemolytica* appeared to be susceptible.

DISCUSSION

Results of intratracheal inoculation of crude lung material into calves at different times during a two-year period varied considerably. Either the material injected differed in its disease-producing capability, or the susceptibility of the calves varied, or both.

Bovine pneumonias occur most often during the highly variable weather in the fall and winter when most cattle movement occurs. Stresses associated with altered environment cannot be taken lightly as predisposing factors.

There is serological evidence^{11,18,28} that the P-LV group of viral agents play some part in diseases of cattle.

From the number of viral agents presently being isolated by tissue culture methods,^{17,19} there is strong reason to suspect that more than a single causative factor may be incriminated in bovine respiratory infections.

If further investigations, either cultural or serological, demonstrate the presence of a virus of the P-LV group in bovine respiratory infections, it would be appropriate to name this disease "bovine pneumonitis,"²⁰ in keeping with the terminology used to describe mammalian and avian pneumonic processes caused by such viral agents.

The purulent encephalitis found in calf 338 is one of several instances where this condition has been found associated with bovine respiratory infections.²⁴ The histopathological changes associated with SBE virus infection in cattle indicate that the blood-brain barrier might be damaged enough to allow entrance of bacteria.

In a review of bovine encephalomyelitis caused by one of the P-LV group of organisms,²⁶ it is stated that:

Epizootologic observations indicate that encephalomyelitis represents an interesting complication of a more generalized and usually minor infection. A serologic survey indicated a fairly widespread infection particularly in respect but not exclusively confined to herds in which the disease made its appearance. Thus, the majority of the cattle tested . . . experienced infection from which they recovered. By adult life 50% or more had acquired group-specific antibodies . . . figures for northwestern states (United States) ranged between 7 and 40%. The figures given . . . in Japan ranged between 8 and 100%.

It seems likely that a P-LV virus eliminated in the feces of animals would be

available for subsequent inhalation. While the administration of an agent (YFV), isolated from the feces of animals, in conjunction with *Past. hemolytica* did not cause the death of experimental calves, it produced clinical signs of a respiratory disease.

Partial etiological explanation for some of the chronic enzootic pneumonic processes that affect domestic animals might be found if antibiotic agents were used more selectively during attempted isolation of unknown causative agents. The P-LV viral agents are remarkable for their cohabitation compatibility in the host, their varied tissue tropisms, and visibility, as well as for the range of experimental animals and systems that can be used as indicators of their residence.

Immunization of cattle against this group of viral agents may be possible. Chicken embryo vaccines prepared with agents of the P-LV group alone, or with *Pasteurella multocida* or *Past. hemolytica*, or both, might be of value in the prevention of pneumonia in newly weaned calves.

SUMMARY

A crude suspension of lung material from cattle that died as a result of an acute, severe, respiratory epizootic produced an increase in temperature, clinical signs, and lesions of pneumonia when injected intratracheally into experimental calves.

Three viral agents belonging to the Psittacosis-lymphogranuloma venereum (P-LV) group were isolated from calves. When experimental calves were inoculated intratracheally with two of these agents, alone or in combination with *Pasteurella hemolytica*, there was a temperature rise, clinical signs of respiratory disease, and in one instance death resulted.

Apparent immunity to the P-LV viral agents was found following inoculation with either a crude pneumonic lung suspension, or with the virus of sporadic bovine encephalomyelitis alone or combined with *Past. hemolytica*.

An agent having the characteristics of the P-LV group was isolated from the nasal secretions of a calf clinically sick with a bovine respiratory infection.

The term "bovine pneumonitis" is proposed for the bovine respiratory infection caused by viruses of the P-LV group.

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Miyagawanella Virus in Sheep

A virus of the psittacosis-lymphogranuloma group was isolated from the feces of 8 of 25 apparently healthy sheep in Japan. The frequent finding of complement-fixation antibodies against this virus indicated a high incidence of the infection. The virus is closely related to the bovine strain and also to the virus of goat pneumonitis. It was readily isolated in embryonating eggs after a passage in guinea pigs. —*Vet. Bull.* (Dec., 1958): *Item* 3975.

Lesions of the Nervous System of Pigs with Atrophic Rhinitis

When sows and their pigs with atrophic rhinitis were studied, in Canada, antibodies for viruses of the psittacosis-lymphogranuloma group were found in the serums of the sows. Also, intracellular and extracellular bodies were found in various organs of both sows and pigs. The initial lesions were in the nerves of the nasal region. Turbinate atrophy followed vascular obliterations without inflammatory proc-

esses. In some cases, the disease is congenital and may produce abortions and stillbirth.—*C. L'Ecuyer in Canad. J. Comp. Med.* (March, 1958): 88.

Vitamin A Deficiency in Pullets

Contrary to some findings, when vitamin A deficiency was established in pullets, there was a marked drop in egg production and in hatchability and a high mortality in the chicks which hatched.

When vitamin A was fed, after hatchability had fallen to nil, egg production returned to normal in two weeks and hatchability in one week. The eggs of deficient pullets contained less than 20 per cent as much vitamin A per yolk as did the controls.—*Vet. Bull.* (Nov., 1958): *Item* 3687.

New Infectious Bronchitis Virus Spread in Chicken Vaccine

The "Connecticut type" of infectious bronchitis virus, instead of the "standard type" used in most vaccines, was identified in a commercial vaccine used in California. As a result, only 25 to 40 per cent of the birds vaccinated were immunized against the standard type virus; also, another strain of the disease had been introduced into the state.—*Dr. L. G. Raggi, California Farmer*, 209, (Dec. 6, 1958): 518.

Toxoplasmosis in Newborn Pups

Prenatal infection with *Toxocara canis* may be produced by feeding embryonated eggs to pregnant bitches. In naturally infected pups, third-stage larvae were present in the lungs at birth and continued to appear during the first week of life (length: 0.6-1.3 mm.). Adult organisms developed during the second and third weeks, reaching a length of about 67.0 mm., but eggs were not yet appearing in the feces.—*Vet. Bull.* (Nov., 1958): *Item* 3643.

Hyaluronidase and Erysipelas

The hyaluronidase content of *Erysipelothrix rhusiopathiae* varies with the strain. Strain A usually has a greater content than strains B or N, some of which have none. The hyaluronidase content has a significant influence on the pathogenesis of the organism.—*F. W. Ewald in Monatsh. f. Tierheilk.*, 9, (Nov., 1957): 333-341.

Relationship of Atrophic Rhinitis and Virus Pig Pneumonia to Growth Rate in Swine

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ATROPHIC RHINITIS (AR) and virus pig pneumonia (VPP) are chronic diseases of swine which adversely affect the economic production of pork. It has been reported that pigs infected with AR were significantly lighter at 56, 84, 112, 140, and 168 days than animals which showed no signs of infection.⁴ Performance of the so-called "normals" was substandard, which suggests that animals considered normal by these authors were also affected to some degree by the disease.

Retardation of growth in pigs with AR was also indicated by data showing that normal pigs at 56 and 140 days of age exceeded AR-infected pigs in average weight by 3.9 and 6.4 per cent, respectively.⁵ Normal pigs also exceeded affected ones in daily gain by 5.2 per cent. The incidence of AR on a herd basis was 45.9 per cent. Again normalcy was based on absence of gross evidence of AR. There was some pneumonia in this herd but it was considered to be without influence on growth rate.

No report on the effect of VPP on growth rate of swine has appeared in the American literature. From England it has been shown in well controlled experiments that VPP caused pigs to grow 17 per cent more slowly and lowered feed utilization efficiency 22 per cent.³ Atrophic rhinitis was not present in these herds.

Observations made from this laboratory substantiate the English reports that VPP seriously hampers efficient pork production. Studies on a herd simultaneously infected with AR and VPP are reported.

MATERIALS AND METHODS

Population.—The herd studied was originated by buying stock from a number

of sources to obtain genetic diversity within the herd. Boars were continually added from other herds, often without much concern for their state of health. Brucellosis had been introduced earlier but was eliminated several years ago by blood testing and segregation. Chronic respiratory diseases have continually contributed to mediocre performance of this herd.

The snouts and lungs of 213 hogs sent to market were examined for AR and VPP by the methods described below. Of these, 130 were purebred and the remaining 83 were crossbred animals, generally of three breeds. They were identified by tattoo at time of final weighing prior to shipment to market.

As a comparison, studies based on examination of snouts and lungs of swine

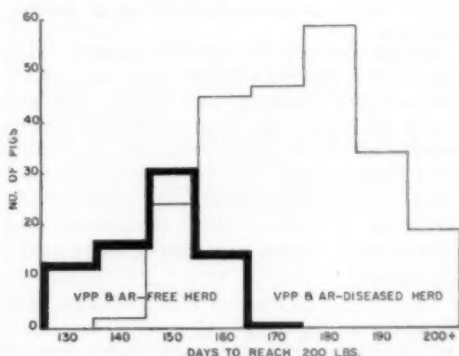


Fig. 1—Relative time (in days) required to reach a market weight of 200 lb. by hogs from a "disease-free" herd and from a herd infected with atrophic rhinitis (AR) and virus pig pneumonia (VPP).

from a purebred herd of the same blood lines but free of AR and VPP are included. This herd was established by complete repopulation with hysterectomy-derived stock. The 77 animals examined at slaughter were naturally-farrowed pigs from dams originally taken by hysterectomy and

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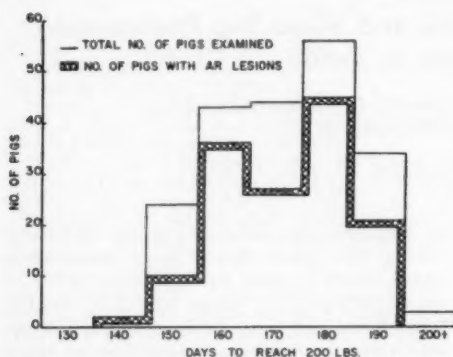


Fig. 2—Incidence of atrophic rhinitis (AR) within an infected herd of hogs.

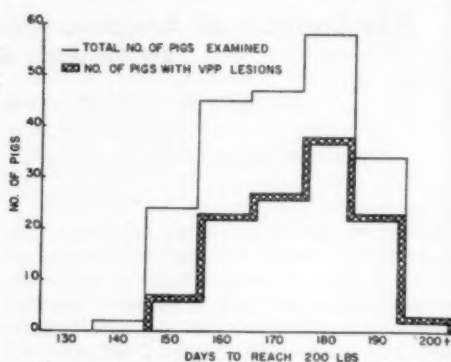


Fig. 3—Incidence of virus pig pneumonia (VPP) within an infected herd of hogs.

raised in isolation.⁹ They were given the same ration as the infected ones and were under a similar program of management.

Diagnosis.—The diagnosis of AR was based on herd history and careful examination of the nasal turbinates when the animals were slaughtered. Definitely undersized or deformed turbinates or deformed septa were observed before establishment of an AR-positive diagnosis.

Severity was graded as 0 for AR negative, 1 for AR moderate positive, and 2 for severe AR positive in which turbinates were lacking or severely damaged.

Virus pneumonia was diagnosed from the herd history and from gross and histopathological changes. The lesions observed were the same as those described previously⁷ which consisted primarily of a small and large round cell peribronchiolar and perivascular infiltration. No lesions were observed in tissues other than lungs and the lymph nodes associated with lung drainage.

Severity was also graded with VPP negative as 0, VPP positive but involving less than one half of the cardiac lobes of the lung with a score of 1, and VPP positive but to a greater extent with a score of 2. Generally, pigs with VPP-positive score 2 had all of the cardiac and nearly all of the apical lobes involved.

Weighted averages of intensity for AR and VPP were obtained by totaling the scores and dividing by two the number of animals observed. This presumes that each animal had the opportunity to develop severe lesions characteristic of both AR and VPP. Thus, if all animals had maximally severe lesions, the intensity would be 1.0. A similar scoring method has been used previously to indicate severity of influenza infections in mice⁸

RESULTS

Comparative performance of hogs marketed from a herd of swine free of AR and VPP and those from a herd infected with AR and VPP is indicated (fig. 1). Data are presented as the total number of hogs reaching a market weight of 200 lb. within the time specified. Approximately 80 per cent of the swine from the AR- and VPP-free herd reached market weight by 5 months of age. In general, hogs from the herd free of AR and VPP went to market a month earlier than those from the herd infected with AR and VPP.

The data from the AR- and VPP-infected herd were examined to determine the relative depressive effect of the two diseases. Both pigs which reached market weight before 150 days had AR (fig. 2), whereas none of the 3 which reached market after 200 days had gross lesions of AR. The overall incidence of recognizable AR in these pigs was 68 per cent. Severity scores, with 1.0 score representing severe disease in all animals, were 0.7, 0.3, 0.5, 0.4, 0.5, 0.4, and 0.0, respectively, within the 140-, 150-, 160-, 170-, 180-, 190-, and 200-day groups. Thus, incidence and severity of infection appear to have little relationship to the growth rate of the afflicted swine.

Data for VPP are presented similarly to those for AR (fig. 3). Late-marketed pigs had, in general, severe infections. The overall incidence was 57 per cent. Severity by scores was 0.0, 0.2, 0.3, 0.4, 0.5, 0.4, and 0.7. Thus VPP lesions were more extensive in those animals which took longer to reach market weight.

Seventeen other pigs in the diseased herd were not examined for lesions of AR and VPP. Five of these were discarded at the 112-day weighing as their average weight was only 48 lb. The other 12 were not marketed within the period of study. Their average weight at 200 days was 170 lb. Death loss from birth to market from all causes was less than 30 per cent.

DISCUSSION

The observations and findings made in this study of AR and VPP substantiate the contention of British veterinarians³ that VPP has a serious depressing effect upon the growth of swine. The seriousness of the total impact of VPP on the swine industry is emphasized considering that 40 to 50 per cent of the swine in the U.S. are infected annually with VPP.⁶ Once VPP virus gets into the lung, it may persist indefinitely so that gilts previously infected in their suckling period may pass the disease on to their offspring by contact after birth.² There is no effective drug or vaccine with which to control VPP.

One other serious problem associated with both AR and VPP is that pigs with mild infections may appear normal. The unscrupulous dealer, by culling the obviously diseased pigs, may sell infected feeders to unsuspecting buyers. Unless some control measures are established, more and more herds will become infected with these chronic swine diseases. It could eventually become almost impossible to obtain breeding stocks free of these diseases.

Both AR and VPP can be eliminated from swine by practical repopulation procedures.⁶ Pigs are obtained by hysterectomy or cesarean section without exposure to their dams' environment and raised in laboratory isolation for four weeks. They are then transferred to and grown on farms from which all other swine have been removed. These new "disease-free" pigs form the nucleus of a clean herd. Offspring from dams in such a clean herd can be used to completely repopulate other herds. Succeeding generations of pigs may also be used as clean breeding stock.

Crossbred hogs in the same AR-VPP-infected environment as purebreds reached market weights at earlier ages. They did not grow as fast as "disease-free" purebred pigs. These findings suggest that crossbred pigs cope with AR and VPP infections more

readily, which may be a ramification of hybrid vigor.

SUMMARY

The lungs and snouts from 213 market hogs from a single herd infected with atrophic rhinitis (AR) and virus pig pneumonia (VPP) were examined for gross evidence of those diseases. An evaluation was made of the relationship of the absence or presence and extent of AR and VPP in individual pigs to the length of time required for them to reach a market weight of 200 lb. Market hogs from an AR-VPP-free herd of the same breeding lines as 130 of the above animals were used for comparison.

A growth-depressing effect from AR in the AR-VPP-infected herd was not obvious but VPP was associated with retarded rates of gain. Slow-growing pigs had a higher incidence and more severe VPP than the faster-growing pigs. Hogs from the AR-VPP-free herd reached market weight a month earlier than those from the AR-VPP-infected herd.

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Q Fever in West Germany

In 1947 and 1948, more than 2,000 persons in four cities with a total population of about 8,000, in Germany, developed Q fever. The source was mainly cattle, but also sheep and goats. In 1948 to 1950, 149 slaughterhouse workmen or butchers in three plants became infected, and one died. In 1952, the entire family of a peasant, and three neighbors, were seriously affected within two weeks after aiding a cow in parturition. The cow was strongly positive for Q fever.

In 1952, 600 persons who attended an auction of 550 breeding cattle were reported to have become ill with Q fever, two to three weeks later. This included people who had not touched the animals, as well as veterinarians and other handlers.

In attempts to transmit the disease, the repeated dipping of teats of lactating cows into milk containing *Coxiella burnetii* failed to produce Q fever infection. However, 21 cows of various ages and in various stages of pregnancy and lactation were infected by inhalation of culture containing aerosol. While most of them developed complement-fixing antibodies, only 3 were found to eliminate the organism in the milk, fetal membranes, or other body secretions.

While infected animals show no clinical signs of infection, abortions may result, especially in sheep and goats. As with *Brucella*, the *Coxiella* are deposited mainly in the gravid uterus and in the mammary glands.

Vaccines of *Coxiella burnetii* were effective for man and other animals. In heavily infected areas, eradication of the disease by slaughter would be the cheapest and most effective means of control. However, where infection is relatively slight, animals in infected areas should be quarantined and serologically tested before they are transported elsewhere.—*C. Ehrlich in Der prakt. Tierarzt, (Sept., 1958): 400-403.*

Epidemic of Q Fever in Quebec

In April, 1956, 30 of 170 employees of an abattoir at Princeville, Que., became ill within a week. All were handling meat and viscera; none of the office workers were affected. All but one of the 17 men doing the slaughtering became ill with Q fever.

The source of infection was not determined since none of the meat from animals

slaughtered at the probable time of infection (incubation period is about 2 weeks) was available. When the source herds were investigated, *Coxiella burnetii* was isolated, by guinea pig inoculation, only from the placentas of 4 sheep. Antibody evidence of past or present infection was found in 9.9 per cent of the cattle and 50 per cent of the sheep later tested in the province.

The signs and symptoms of the disease in people were those of an acute respiratory virus infection.—*Canad. J. Pub. Health, 49, (Dec., 1958): 520.*

Leptospirosis in Horses

Equine leptospirosis in Romania showed a seasonal character, occurring from May to September with most cases in June and July, and usually in locations near running water or swamps. Swine were considered the major reservoir for *Leptospira pomona*.

The disease in horses was characterized by sudden fever, icterus (75% of cases), hemorrhages of conjunctivae (46.6%), urticaria (32.3%), colics (12.5%), edemas in the extremities or subabdominal and sternal regions (38.3%), and iridocyclitis (10%).

In all 40 cases studied, a positive titer of 1:800 or above, to *L. pomona*, occurred four to 15 days after the appearance of clinical signs. *Leptospiras* were detected in the kidneys of 1 horse which died of the disease.—*P. Jivoin et al. in Yearbook Inst. Anim. Pathol. and Hyg., Bucharest, 8, (1957): 40.*

Brucellosis in Shepherd Dogs

Of 102 Shepherd Dogs (in Germany in 1957) used with sheep, many of which were infected with brucellosis, 31 reacted to various tests for brucellosis, but none showed clinical signs of the disease. Agglutination test titers of 1:20 were considered as positive; 1:10 as suspicious. A skin thickening of 3 mm. was considered positive with the intradermal allergic test.

Brucella organisms were frequently cultured from the tonsils and lymph nodes of the head. A case of transmission of brucellosis from sheep to a man through a dog is reported.—*H. G. Ostertag and H. Mayer in Monatsh. f. Tierheilk., 10, (Nov. 4, 1958): 57.*

Nephritis in a Sheep—A Case Report

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Nephritis in sheep is either a relatively uncommon condition or one which has attracted little attention. In a brief review of the literature, in 1952,⁵ 1 case of glomerulonephritis in a ram³ and several cases of pyelonephritis in sheep were described.^{1,2,4} Nephritic lesions have been mentioned in cases of sheep pox.⁶

The purpose of the present report is to describe a case of nephritis associated with *Corynebacterium renale* in an aged South-down ewe.

CASE REPORT

No clinical history was available, the animal being found dead one morning. At necropsy, significant lesions were restricted to the kidneys. Both kidneys were enlarged and soft, and the capsular surface was smooth and grayish white with spidery, red vascular markings. On cut section, the cortex and medulla showed marked vertical white striations, and there was mild widening of the renal pelvis. A small quantity of yellowish gray purulent exudate was present in the pelvis.

No lesions were found grossly or microscopically in the ureters or urinary bladder.

Histopathological examination revealed a diffuse chronic interstitial nephritis involving both the cortex and medulla. The glomeruli were not significantly involved, while the tubules showed both degenerative and regenerative changes. The interstitial tissue was fibrotic, edematous, and contained numerous collections of lymphocytic and mononuclear cells (fig. 1). The medullary tubules showed attempts at regeneration together with intraluminal accumulations of neutrophil leukocytes (fig. 2). The pelvic epithelium was largely desquamated into the purulent pelvic content.

A pure culture of *C. renale* was isolated from the pelvic exudate. Culture of the kidneys was negative. The organism produced

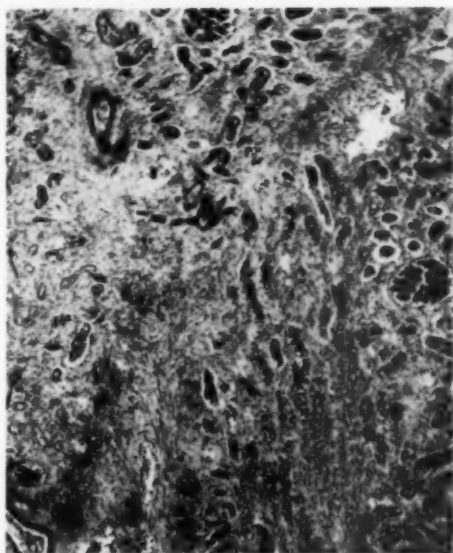


Fig. 1—Photomicrograph of renal cortex in a sheep, showing normal glomeruli and fibrotic, edematous interstitial tissue infiltrated with lymphocytes. H & E stain; x 40.

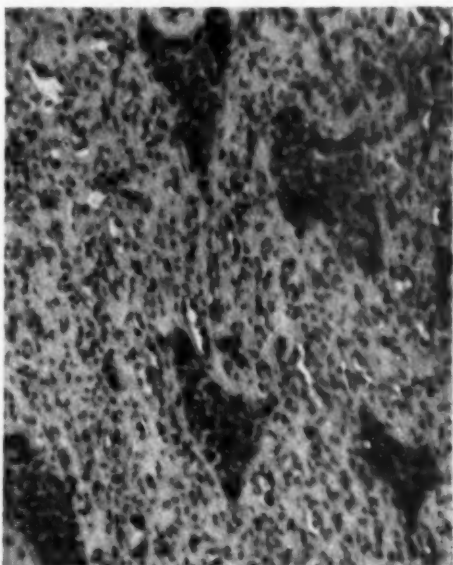


Fig. 2—Section of renal medulla in a sheep shows markedly fibrotic stroma and regeneration of tubular epithelium. Neutrophils, not readily detectable at this magnification, are mixed with the proliferating tubular epithelium. H & E stain; x 40.

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The authors are indebted to Dr. James R. Rooney for his assistance with this case.

small ivory colonies on 5 per cent bovine blood agar and was a gram-positive diphtheroid showing considerable pleomorphism and palisading. The fermentation reactions were typical for *C. renale*—acid production only in glucose and strong alkaline digestion of litmus milk at 48 hours.

DISCUSSION AND CONCLUSIONS

The common occurrence of *Corynebacterium renale* in pyelonephritis of cattle is well documented.^{4,7} Only vague mentions of this organism as a cause of nephritis in sheep were encountered. The lack of lesions in the urinary bladder or ureters in this sheep indicates that it was not an ascending infection, while the insignificant glomerular changes speak against hematogenous origin.

On the basis of 1 case and in view of the chronicity of this case, however, no statement concerning pathogenesis can be made.

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A Review of Bovine Mastitis

The principal organisms associated with mastitis are *Streptococcus agalactiae*, *Streptococcus uberis*, and *Micrococcus pyogenes*.^{*} These usually cause a chronic mastitis and reduction in milk yield with or without clinical signs. Mastitis due to other organisms is not common but may be serious. *Streptococcus agalactiae* can be eradicated from most herds by good sanitation, frequent cultural tests, and treatment of all infected quarters. However, these measures are inadequate to prevent new reinfection with *M. pyogenes* and *Str. uberis*.

In Connecticut, during 1957, of 1,191

herds surveyed 650 were free of *Str. agalactiae*. Of the 15,407 cows in the 650 herds, 14 per cent were infected with non-*Str. agalactiae* streptococci, 18 per cent with *M. pyogenes*, and less than 1 per cent with other organisms. In the 541 *Str. agalactiae*-infected herds, 23 per cent of the cows showed infection with this organism, 8 per cent with other streptococci, 18 per cent with *M. pyogenes*, and less than 1 per cent with other organisms.

In a survey of 53,493 cows in New York State, *M. pyogenes* infection was found in 8 per cent of both the *Str. agalactiae*-infected and noninfected herds.

Factors that influenced the chances of other infections are: degree of exposure, inherited resistance, age, ability of the teat canal to prevent passage of microorganisms, prolonged milking, and those which lower the resistance of the gland such as chilling, excessive feeding of high-protein concentrates, stage of lactation, incomplete milking, and improper teat cup liners. The passage of pathogenic organisms through the teat canal is accomplished either by growing their way through or by suction during milking.—W. N. Plastring in *J. Dai. Sci.*, 41, (Sept., 1958): 1141.

Viral Bovine Leukosis Reported

A filtrate of lymphoid tissue, from a calf with acute lymphatic leukosis, was cultured in embryonating chicken eggs for 20 serial transfers. When 2 healthy calves were inoculated with this culture material and were observed for two years, persistent and specific changes occurred in the leukocytes, lymph nodes, and myeloid tissue. Lymphoid leukosis of cattle may, therefore, be considered as due to a virus.

Attempts to transfer the disease from these calves to healthy ones are in progress.—F. Montemagno in *Acta Med. Vet.* (Oct., 1958): 301.

Pulmonary Carcinoma in Carnivores

Neoplasms of the lung with adenoma-like structure are derived from epithelium of the alveolus and possibly of the terminal bronchioli. The role of the bronchial gland is not clear. It is more correct to designate them as "alveolar-cell carcinomas" than as an adenomatosis of the lung.—H. Sedlmeier and E. Dahme in *Berl. u. Münch. Tierärztl. Wchnschr.* (Nov., 1958): 416.

*More commonly known as *Staphylococcus aureus*.

Estrogenic Activity in Green Forage Crops and Its Effects on Breeding Ewes

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NUMEROUS INVESTIGATORS have reported the presence of estrogens or estrogen-like substances in a variety of feedstuffs from different parts of the world. This subject was reviewed in 1954.¹⁰ Two workers have stated that, "More than 50 species of plant material . . . have been shown to have estrogenic activity."¹⁸

This characteristic of some pasture crops caused the development of a serious problem in sheep flocks being grazed on subterranean clover in Australia, in 1941. It was reported³ that female sterility, dystocia, and uterine prolapse developed in ewes, and that in many instances the infertility was permanent. Wethers grazed on the same pastures showed mammary development suggestive of excessive levels of estrogen in the body.

In 1948, there was reported⁷ the extraction from subterranean clover of a substance which caused vaginal and uterine changes in mice and guinea pigs similar to those produced by the injection of estradiol. In 1951, genistein, a proestrogen, was isolated from subterranean clover.⁵

In the farm flock area of the eastern United States, there has been a growing suspicion that the kind of pasture on which sheep grazed prior to and during a late summer and early fall mating season sometimes interferes with conception, and thus necessitates rather extensive rebreeding. An investigation of this problem as related to the kind of pasture has been conducted at the Ohio Agricultural Experiment Station in a series of related studies. The results have tended to support the theory that some legumes contain estrogen-like substances which may interfere with reproduction.

EXPERIMENTAL STUDIES AND RESULTS

The estrus cycles, rates of conception, and lambing dates were studied for three years in flocks of Columbia ewes.¹⁰ One

flock each was pastured on Ladino clover, birdsfoot trefoil, and bluegrass. The three-year average for the estrus cycles showed that the mean first estrus was detected significantly earlier in ewes on bluegrass than in those on Ladino clover; the date for birdsfoot trefoil was intermediate. The rate of conception for this same period also showed a distinct difference. The ewes grazed on Ladino clover and birdsfoot trefoil conceived significantly later (21.7 and 19.9 days, respectively) than the ewes on bluegrass.

This fact was further emphasized at lambing time. The ewes on bluegrass conceived at a high rate early in the season, and by the fourth and fifth heat periods, only 4 per cent were unbred; consequently, most of the lambs were born within a brief period in the spring. But, in the flocks on Ladino clover and birdsfoot trefoil, 25 to 40 per cent remained unbred at the fourth and fifth heat periods and the lambing interval extended over a much longer period. Also, the number of ewes which lambed at first service was 66 per cent for bluegrass and 41 and 31 per cent, respectively, for Ladino clover and birdsfoot trefoil.

Extracts of Ladino clover, birdsfoot trefoil, and bluegrass plant material have been injected into immature female white mice.⁹ Increase in uterine weight was used to determine the presence of estrogenic activity in the extracts according to the method described.¹¹ Control mice were inoculated with standard doses of estradiol for comparison.

The Ladino clover and birdsfoot trefoil extracts produced significant increases in uterine weight but the bluegrass extracts did not. The increase in uterine weight for mice given Ladino clover varied from 108 to 638 per cent of that of controls according to the dry matter equivalent and degree of chemical purification. For birdsfoot trefoil, the response to the extracts varied from 109 to 356 per cent of that of the controls. Similar extracts from bluegrass plant material appeared to have a de-

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pressing effect in that uterine weight of those mice was usually less than that of the control mice.

As a result of these physiological reactions in mice, it was suggested that if the active material being investigated in these plants was of the nature of an estrogen, then the vaginal epithelium of ewes grazing these pastures should show the characteristic changes which accompany estrogen stimulation. Some of these changes are characterized by an increase in the number of cell layers lining the vagina, mobilization of glycogen in the cells, and cornification and desquamation of these superficial layers of cells. These phenomena have been described in numerous species of mammals.^{1,2,14,15,16,25} The Papanicolaou stain¹⁷ was used.

The ewes to be studied by the vaginal smear technique were selected at random from the various flocks. Because of the limitation of time, a total of 8 animals was studied, 2 for each phase. Larger numbers would have been desirable.

Vaginal smears were collected from anestrus ewes grazed continuously on Ladino clover and birdsfoot trefoil. The bluegrass pastures contained about 50 per cent white clover; therefore, control ewes in anestrus were penned in a barn and fed cured hay. Vaginal smears were collected from the control ewes for several days, after which they were inoculated with estradiol and more smears taken. Later in the season, daily smears were collected from ewes experiencing a normal estrus cycle. Results of the vaginal smear studies have been published.^{22,23}

Smears from the anestrus control ewes were similar to smears taken during the proestrus and estrus phases of the normal cycle. The cells were few in number, basophilic-staining, and unchanged morphologically. Marked similarity was found in smears from (1) anestrus control ewes following administration of estradiol, (2) ewes in metestrus and diestrus, and (3) anestrus ewes grazed on Ladino clover and birdsfoot trefoil. These smears were thick; bacteria and neutrophils were numerous; and almost all cells were acidophilic-staining, indicating cornification. Cells showed curled edges, pyknotic nuclei, and clumping. The heavy desquamation, cornification, clumping, and morphological changes were suggestive of estrogenic activity. These findings are in general

agreement with reports^{6,8,12,13,20,21} of other authors.

In an effort to discover where interference with conception occurred, 22 ewes were pastured on Ladino clover and 22 were pastured on bluegrass throughout the summer and fall. Breeding season began on September 10. Each ewe was bred at first estrus after this date and slaughtered 72 hours later. The fallopian tubes were flushed and the recovered ova were examined for fertility. From the ewes on Ladino clover, 53 per cent of the recovered eggs were fertile; 71.5 per cent fertile eggs were recovered from ewes on bluegrass early in the summer. Late in the season, the number of fertile eggs was similar in both lots.²⁴

It appears from these data that ovulation occurs without incidence but fertilization does not follow as consistently. For the entire breeding season for these two flocks of ewes, 59 per cent of the total eggs recovered from the ewes on Ladino clover were fertile compared to 75 per cent for the ewes on bluegrass.

Even though there was evidence of estrogenic stimulation in anestrus ewes pastured on Ladino clover and birdsfoot trefoil, the regularity of the estrus cycles was not disturbed, since they recurred every 16 to 17 days in the fall if conception did not take place. The possibility of unseasonal estrus periods developing during the anestrus phase in ewes pastured on Ladino clover and birdsfoot trefoil is being investigated.

DISCUSSION AND CONCLUSIONS

The data presented thus far suggested the presence of estrogen-like substances in certain plants, but the evidence was based only on clinical and biological tests. However, in 1957, the purification and crystallization of a highly active estrogen named "Coumestrol" from Ladino clover was reported.⁴ This supports the observation that some plants contain an estrogen-like material. And it apparently is present at times in large enough quantities to alter the normal reproductive physiology of ewes which are fed these plants.

Further investigation is needed on individual and breed variations to these estrogen-carrying feeds, the effects of these substances on rams, variation in the quantity of these materials in different strains of plants, and seasonal variation in animals

and plants. Further research may reveal this estrogen activity in feed material to be of little more significance than that reported here.

On the other hand, the presence of estrogen-like materials in plants may be so significant that by consideration of such factors as strain selection of plants, variation in breed response, pasture rotation, kind of season, time of year, and sex of animals, these plants can be used to influence reproduction, growth, and rate of weight gains almost at will under controlled conditions.

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White Muscle Disease in Lambs and Calves

Five lots of 12 pregnant ewes each were fed as follows: (1) a normal control ration; (2) a basal experimental white muscle disease-genic ration; (3) the basal experimental ration plus 770 I.U. of vitamin E (as d-a-tocopheryl polyethylene glycol 1,000 succinate) per ewe per week, given parenterally; (4) the basal experimental ration plus 100 I.U. of vitamin E per ewe daily, given orally, as d-a-tocopheryl acetate; and (5) the basal experimental ration plus 0.1 p.p.m. selenium calculated for the entire ration, supplied as sodium selenite.

In the lambs born to these ewes, there was a high incidence of white muscle disease, except in the normal control and selenium-supplemented ration groups. Under the conditions of this experiment, sodium selenite, when fed to supply 0.1 p.p.m. of selenium in the ration, exerted a strong protective effect against this disease.—[O. H. Muth, J. E. Oldfield, J. R. Schubert, and L. F. Remmert: *White Muscle Disease (Myopathy) in Lambs and Calves. VI. Effects of Selenium and Vitamin E on Lambs*. *Am. J. Vet. Res.*, 20, (March, 1959): 231-234.]

Progress with the Etiology of Shipping Fever

'Tis said that "familiarity breeds contempt." Be that as it may, familiarity does often breed indifference. As applied to diseases, we seem to be relatively most indifferent to the older ones; those we have learned to live with, such as the common cold in man, so-called "shipping fever" in cattle, and hog cholera.

Today, with our modern knowledge and equipment, research usually meets new diseases head on and they are often soon controlled or eradicated. This has been true of hog cholera in countries where it is new, yet in the United States we move slothfully in attempts at eradication.

As for shipping fever, although it has caused huge inestimable losses, there has long been a tendency to ignore it when research projects were planned. In recent years, however, several groups have done considerable research regarding its cause and control.

It is known that stress and infection both are important etiological factors in shipping fever. Although many were satisfied that *Pasteurella*, incriminated many dec-

ades ago, was a primary factor, others suspected that a virus was responsible. However, positive evidence of a viral agent could not be found. Such evidence now is being presented (*see p. 222*).

Another respiratory disease, pneumonia in swine, which many had considered a pasteurellosis, has been found to be of viral origin, with other organisms as secondary invaders. The role of stress in this viral pneumonia (VPP) has not been evaluated.

In still another respiratory disease, swine influenza, all three factors are apparently involved, although in a unique pattern. Those not experienced with swine "flu" seem most impressed with the simultaneous involvement of a virus (transferred by lungworms via earthworms) and a bacterium (*Hemophilus suis*). However, the practitioner is most cognizant of the stress factor—exposure to a cold, damp environment which seems to precipitate acute illness in many shoats in a herd.

The role of viral type agents in shipping fever is not yet proved.

More on Veterinary Ownership

Some readers apparently were misled by lack of clarity in the editorial on this subject in the January 1 issue of the JOURNAL. Therefore, we will attempt to clarify a few of the basic points involved.

First, the AVMA has *not* taken an official position on the controversial subject of group veterinary ownership of biological and pharmaceutical supply firms. The Committee on Veterinary Service recommended further study of this problem and the House of Delegates accepted both the recommendation and their report. This complex issue merits careful study.

Basically, the prime function of the veterinary profession is to serve owners of animals. Arrangements which improve that service should be encouraged; those which might impair it should be discouraged.

Clearly, the investments one makes are a personal affair. Should we question the right of a practitioner to invest in a private laboratory, either for making diagnoses or for producing therapeutic agents

for use in his practice, so long as he does not go beyond the proper dispensing?

Likewise, at what point should we question the right of a practitioner to pool his investments and his efforts with those of colleagues? Group practices are encouraged because they presumably result in more accurate diagnoses and better service to the clientele. However, the pooling of practitioners' investments to produce therapeutic agents has been criticized.

The crux of the question seems to be: Will the result in any way impair the service which these men give their clientele? Would the practitioner allow a possible producer-profit motive to interfere with his using the therapeutic agents which would be most beneficial? Also, might the public conclude that the profession was becoming more interested in trade promotion than in the improvement of veterinary service?

The fact that the cited editorial stimulated a number of letters to the editors, only excerpts of which are published (*adv. p. 4*), indicates that this is a sensitive subject.

Abstracts

Electrocardiograms of Lactating Cows

Electrocardiograms were taken of 45 normal lactating dairy cows three different times. It was concluded that sinus arrhythmia should not be considered abnormal unless a fluctuation in cycle length of 0.12 second, or more, occurred.

The electrocardiograms resulting from standard limb leads may be grouped satisfactorily on the basis of the appearance of the ORS complex in lead II.—[R. B. Lank and B. W. Kingrey: *Electrocardiograms of Normal, Lactating Dairy Cows*. *Am. J. Vet. Res.*, 20, (March, 1959): 273-277.]

Hematology of Bovine Reticuloperitonitis

Of 50 cattle with relatively uncomplicated chronic traumatic reticulitis, 65.3 per cent showed more neutrophils than lymphocytes. In 38 per cent, there was a complete reversal of the normal lymphocyte-neutrophil ratio of 1.7:1.0.

A blood examination, including the total white cell count and differential count, is of value in the diagnosis and prognosis of chronic traumatic reticulitis.—[J. M. Broun, B. W. Kingrey, and B. D. Rosenquist: *The Hematology of Chronic Bovine Reticuloperitonitis*. *Am. J. Vet. Res.*, 20, (March, 1959): 255-264.]

Human Serum as a Standard for Pig Serum Analyses

A pooled serum from man is recommended for use as a standard for pig serum analyses. The standard can also be used to check equipment, technique, and reagents. Resolution of the standard components is adequate at 5 milliamperes (ma.) constant current for 16 hours or 21 ma. for five hours. Pig serum was resolved with 5 ma. constant current for 16 hours. Freezing and thawing significantly altered the protein pattern of baby pig serum. In one experiment, the average increase due to freezing, in the relative percentage of albumin was from 3.12 to 7.54, significant at the 99 per cent confidence level. Thus, it is not justifiable to analyze frozen serum samples and expect the results to be comparable to fresh samples.—[R. R. Pensinger, E. F. Reber, E. Ersoy, and H. W. Norton: *A Pooled Human Serum as a Standard and the Effects of Freezing and Thawing on the Electrophoretic Patterns of Baby Pig Serum*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 180-183.]

Avian Visceral Lymphoid Tumors

The virus of avian visceral lymphomatosis was passed in primary explant tissue cultures of 19-day-old chicken embryo spleens. The virus was demonstrated in supernatant fluids of the tenth three-day passage, the third five-day passage, but not in the sixth seven-day passage. Packets con-

sisting of as many as ten lymphoblasts, as well as transitional forms, were observed to characterize the cells of the outgrowth of explants of chicken embryo spleens following exposure to the virus.

Fibroblasts showed marked granularity of the cytoplasm. Cultures of neoplastic pectoral muscle, liver, spleen, and kidney from chickens affected with the disease showed marked proliferation and migration of lymphoblasts in comparison to similar cultures from normal chickens.—[O. S. Davis and D. P. Gustafson: *Tissue Culture of Avian Visceral Lymphoid Tumors and in Vitro Serial Passage of the Virus*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 119-126.]

Coronary Circulation in the Dog and Pig

Comparisons of hearts of dogs and pigs show a species difference in relative size and distribution of atrial vessels, in the terminal branches of ventricular arteries, and in modes of venous drainage. The blood supply to the interatrial septum, the atrioventricular node, and the interventricular septum is described. In both species, the descending branch of the left coronary artery and the artery of the posterior longitudinal sulcus supply more blood to the interventricular septum than the septal artery.

Chloroprene latex and vinyl acetate casts, clearings, serial sections, and cineangiocardiographs were used to study the vasculature of 400 hearts. Cineangiocardiographs helped to ascertain the functional pattern of blood flow in the principal coronary arteries and the coronary sinus.—[G. C. Christensen and F. L. Campeti: *Anatomic and Functional Studies of the Coronary Circulation in the Dog and Pig*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 18-26.]

Critical Tests with Polymethylenepiperazine

The anthelmintic activity of polymethylenepiperazine (PMP) in the horse was evaluated in a series of 13 critical and 5 subcritical tests. Additional studies, involving 12 yearlings and 7 mares on which pre- and post-treatment egg and larval counts were made, extended the evaluation against strongyles.

The doses ranged from 5 to 106 mg. of piperazine base per pound of body weight and treatment was via stomach tube, except for several trials on administration via the grain ration. Nearly 100 per cent removal of both mature and immature ascarides resulted from a dosage of 10 mg. base/lb. given by stomach tube. Limited evidence indicated that administration via the grain ration doubled this dosage requirement.

Removal of 85 per cent or more of the small strongyles followed doses as low as 21 mg. base/lb. in the critical tests. Egg and larval count data on other test animals indicated that 10 mg. base/lb. via stomach tube was also effective against small strongyles. In contrast, there was a significant loss

of activity on the small strongyles when this dosage level was fed with the grain ration, even when as many as 14 consecutive daily doses were given.

Removal of approximately 50 per cent of *Strongylus vulgaris* organisms followed dosages of 51 mg. base/lb. and above in the critical tests. Data from the noncritical studies indicated that 40 mg. base/lb. is required for significant removal of *S. vulgaris*.

Activity against pinworms (*Oxyuris equi*) was quite variable, ranging from 0 to 67 per cent for the adult forms and 0 to 12 per cent for the fourth-stage larval forms.

No action was found against *Strongylus edentatus*, *Trichostrongylus axei*, *Habronema muscae*, *Strongyloides westeri*, *Gasterophilus intestinalis*, or *Gasterophilus nasalis*.—[J. H. Drudge, S. E. Leeland, Jr., S. N. Wyant, G. W. Elam, and L. B. Hutzler: *Critical Tests with Polymethylenepiperazine (PMP) Against Parasites of the Horse*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 69-74.]

Foreign Abstracts

Anaplasmosis of Sheep in the U.S.S.R.

The author demonstrated *Anaplasma ovis* and *Theileria recondita* in the blood of Merino sheep in the northern Caucasus. These animals had been raised on farms in the Stavropol region and in Rostov Province, but some of the breeding stock originated in the Dagestan A.S.S.R.

The ticks collected were *Rhipicephalus* (75%) and *Hyalomma plumbeum* (25%). Of the *Rhipicephalus*, 90 per cent were *R. turnicus* and 10 per cent *R. bursa*.

The disease was chronic, resulting in anemia and loss of weight, but splenectomy brought on acute anemia with parasitemia of 16 to 94 per cent of the erythrocytes and death of 3 out of 6 animals.

The author concludes that anaplasmosis is a serious menace to the development of sheep husbandry. It causes a loss of wool production and lowers resistance to other diseases. It is difficult to control because of its subacute course and persistent carrier state.—[L. P. Dyakonov, *Protozoology Lab., All-Union Inst. Exptl. Vet. Med.: On the Geographic Distribution of Anaplasmosis of Sheep in the U.S.S.R.* *Veterinariya* (Moscow), 35, (Nov., 1958): 17-19.]—ROBERT E. HABEL.

Aerosol Vaccine for Swine Erysipelas

Eight pigs were immunized by confining them for three to five hours in a closed chamber sprayed with a suspension of Kotov's vaccine strain of the erysipelas organism. The spray was interrupted every 15 minutes to permit the precipitation of the aerosol. After the animal was removed, the surface of the body was washed with a disinfectant.

Agglutination tests two and three weeks after vaccination showed titers of 1:200 to 1:400. After

25 to 38 days, the vaccinated pigs and 4 controls were inoculated intravenously with 15 to 20 ml. of a 24-hour culture of virulent *Erysipelothrix rhusiopathiae*. The vaccinated animals showed no reaction. Three of the control pigs showed acute erysipelas in three days, and all 4 of them developed polyarthritis.—[A. A. Mescheryakova: *The Aerosol Method of Immunization in Swine Erysipelas*. *Veterinariya*, 35, (Oct., 1958): 44-45.]—ROBERT E. HABEL.

Books and Reports

Pathology of Laboratory Animals

To interpret experimental pathology correctly, one must have knowledge of the normal anatomy of laboratory animals and of the pathology of their spontaneous diseases. Because this knowledge was scattered and often difficult to find, Dr. Rudolph Jaffé, in 1931, prepared the text entitled "Anatomie und Pathologie der Spontanerkrankungen der kleinen Laboratoriumstiere." The present work is essentially a revised edition of this earlier text.

"Pathologie der Laboratoriumstiere" consists of two volumes. The first describes normal and pathological anatomy and is arranged by anatomical system; the second is arranged according to the etiology and also contains a section on serological diagnosis, and two sections on diseases of non-mammalian laboratory animals (fishes, amphibians, and reptiles) and birds.

The contents of each section are well documented (over 10% of the pages are devoted to references); however, the text is more than a review of the literature. The editors, and each of the 47 authors, have done an outstanding job. The lack of uniformity in approach and presentation so frequently observed in books of multiple-authorship have been overcome with pleasing results.

The publisher also deserves recognition for his contributions. The paper is good, the type pleasing, and the mechanical work excellent. There are approximately 600 illustrations—all are good; many are superb.

Unfortunately for those concerned with the medical care of laboratory animals, this excellent text is of only limited value. Some of the commonly occurring infectious diseases are omitted, and those that are included are given only limited space. For example, more pages are devoted to the normal and pathological anatomy of the urogenital system alone than to all of the bacterial and mycotic diseases combined. Further, rarely is any information given on prevention or therapy.

Experimental pathologists will find this text of inestimable value; others will find its usefulness limited.—[*Pathologie der Laboratoriumstiere*. By P. Cobrs, R. Jaffé, and H. Meessen. Two volumes; 1,602 pages. Springer-Verlag, Heidelberg Platz 3, Berlin-Wilmersdorf (West Berlin), 1958. Price DM 298 (approx. \$75).]—ROBERT J. FLYNN.

THE NEWS

Association of Veterinary Examining Boards Formed

Following several years of informal existence and activities, the state boards of veterinary medical examiners have formalized an organization—its name, "The Association of American Boards of Examiners in Veterinary Medicine, Inc." This action was taken at the meeting of state board representatives on Aug. 20, 1958, during the AVMA convention in Philadelphia and followed the adoption of a constitution and bylaws drafted originally by a committee comprising Mr. James O. Hoyle, chairman, New York, Dr. J. A. S. Millar, New Jersey, and Dr. Jean V. Smith, Connecticut.

The need for more formal organization and closer liaison between state veterinary boards had been felt for a long time. Beginning in the mid '40's, group conferences of board members attending AVMA conventions have been held. These were sparsely attended, especially at first, and the programs were usually limited. At the meeting in San Antonio in 1956, it was agreed that a committee be appointed to study formal organization and, if desirable, to draft a constitution and bylaws (see the JOURNAL, Jan. 15, 1957, p. 107).

Objectives

The committee presented its report and draft at the group conference in Cleveland in 1957 (see the JOURNAL, Dec. 1, 1957, p. 534). The proposed constitution and bylaws was then sent to each state board for study, discussion, and action in 1958. As finally adopted, the stated objectives of the new Association are:

To bring together in one Association all state boards of examiners in veterinary medicine to foster an exchange of ideas.

To promote better communication between state boards.

To elevate standards of veterinary education.

To extend mutual help to affiliated boards and their members.

To maintain uniform minimum standards of veterinary education and uniform legislation as a basis for assistance.

Membership

Three categories of membership in the Association are defined:

1) *Active*—State boards of examiners—these have a unit vote.

2) *Associate*—Individual members of affiliated boards—these members may take part in discussions and serve on appointive committees but have no vote.

3) *Life and Honorary*—Persons who have previously served on affiliated boards and have rendered some distinguished service—these have the privilege of the floor but may not vote or hold office.

Dues—For member boards, a minimum of \$25 a year; for associate (Individual) members, \$5.00 a year.

Committees

The A.A.B. constitution and bylaws provide for an executive council and five appointive committees. The latter and their duties are:

Advisory Law Committee—To formulate an outline of a uniform veterinary practice act and aid, insofar as possible, in having it adopted.

Education Committee—To collaborate and consult with the AVMA Council on Education on the aims and objectives of A.A.B. for the purpose of advancing their mutual interests.

Examination Committee—To study the requirements, examination methods, character of questions, and grading of papers of the various boards for greater uniformity.

Grievance Committee—To act as a board of arbitration to settle disputed questions between member boards upon request from a member board.

Reciprocity and Endorsement Committee—To formulate plans and rules for reciprocity and endorsement of licenses between member boards and to show how they be made more universal.

Officers of the Association

The officers of the Association of American Boards of Veterinary Medical Examiners, Inc., elected at the Philadelphia meeting, are: Drs. M. D. Neuhauser, West Lafayette, Ind., president; E. R. Walker, Pawhuska, Okla., first vice-president; W. J. Zontine, Lancaster, Calif., second vice-president; and R. R. Shomer, Teaneck, N. J., secretary-treasurer.

During its formative years, the group was headed by Dr. C. W. Bower, Topeka, secretary of the Kansas State Board. Dr. Bower is now president of the National Board of Veterinary Medical Examiners, an office he held for six years following the National Board's formation in 1950, and to which he was again elected in 1958 (see the JOURNAL, Nov. 1, 1958, adv. p. 31).

Veterinary-Nutrition Conference Promotes Understanding

Sponsored by the State Associations of Iowa, Nebraska, Kansas, and Missouri, a Midwest Veterinary-Nutrition Conference was held December 8-9, in Kansas City, Mo. The program was developed by a committee representing the Midwest Feed Manufacturers' Association and by representatives of the aforementioned State Associations. Approximately 300 persons registered.

Discussing the veterinarian-feed man relationships at the conference were: Drs. R. E. Rebrassier, president of the AVMA; W. E. Poley, Zip Feed Mills, Sioux Falls, S. Dak.; John Aiken, general practitioner, South Sioux City, Neb.; and James H. Magilton, general practitioner, David City, Neb.

Talks on swine nutrition and production were presented by: Drs. A. C. Todd, University of Wisconsin—internal parasites; M. L. Bringegar, Allied Mills, Inc., Chicago—nutritional diseases; D. E. Becker, University of Illinois—swine rations; H. C. H. Kernkamp, University of Minnesota—nutritional deficiency diseases; Robert Nesheim, The Quaker Oats Company, Chicago—swine production; and J. L. Krider, McMillen Feed Mills, Fort Wayne, Ind.—growth stimulants.

The balance of the program was devoted to ruminants: Drs. B. F. Barrentine, Mississippi State College—controlling bloat; C. B. Knodt, Cargill-Nutrena Research Farm, Elk River, Minn.—feed additives; and John B. Herrick, Iowa State College—feedlot stress problems.

Additions to Kansas State's Graduate Program

The Kansas State College Faculty Senate has recently approved the following graduate curriculum proposals for the School of Veterinary Medicine:

- 1) The offering of the Master of Science Degree in the Department of Anatomy.
- 2) The offering of the Doctor of Philosophy Degree in Veterinary Medicine in the areas of pathology and or physiology.

In addition, a new position, "Instructor in the Department of Surgery and Medicine," was created as of January, 1959.

Sunderville Student Aid Fund

A student aid fund has been established at Cornell University in memory of the late Earl Sunderville (COR '08) who was emeritus professor of anatomy.

Administrative details concerning the fund are not yet decided, but it is expected to be used in cases of real emergencies in the life of students.

Contributions can be sent to the Sunderville Veterinary Student Aid Fund in care of the dean of the veterinary college.

Florida University Strengthens Its Veterinary Research Program

A program has been inaugurated at the University of Florida, under the direction of Dr. William Pritchard, in which the nation's leading authorities in various fields are brought to the campus for periods of weeks or months to consult with the resident staff on their research specialties. These consultants work on active research projects along with the departmental staff.

The specialized techniques, methods of approach, and research philosophy of the consultant are studied by the departmental staff. Departmental and all-university seminars as well as discussion periods are also scheduled. The following consultants participated in this program during the past year:

Dean Carl A. Brandly, University of Illinois, served as a consultant on departmental administration, establishment of a graduate program in veterinary science, and in research on viral diseases of animals.

Dr. Donald P. Gustafson, Purdue University, served as a consultant on tissue culture techniques, establishment of a swine disease research program, and on the institution of the new virus research laboratory.

Dr. H. C. H. Kernkamp, University of Minnesota, surveyed the swine disease situation in Florida and made recommendations on the establishment of a swine disease research program.

Dr. Harry M. Martin, University of Pennsylvania, served as a consultant on arthropod cytology, arthropods as vectors of animal diseases, and methods of studying the life history of *Anaplasma marginale* in ticks found in Florida.

Dr. Jacob Traum Honored

At the centennial celebration of the Royal Veterinary and Agricultural College at Copenhagen, Denmark, last September, the honorary degree, Doctor of Veterinary Science, was conferred in absentia on Dr. Jacob Traum "... in appreciation of his outstanding achievements in the field of research on swine brucellosis and infectious vesicular diseases of livestock."

Dr. Traum retired as a professor of veterinary medicine from the University of California in 1953 after being associated with that university for 35 years. Shortly after his retirement, he was appointed chief scientist at the Plum Island Animal Disease Laboratory, a position he held until the fall of 1956 when he retired from the U.S.D.A. having served the Department for a total of 15 years.

At present, he is a consultant to the Plum Island Animal Disease Laboratory and to other federal agencies and state livestock officials in California.

"The Champ" to Promote Feed Exports to Europe

The livestock educational exhibit known as *The Champ* will tour Europe this year as part of the export-promotion of livestock feedstuffs being carried out by the U. S. D. A.'s Foreign Agricultural Service in cooperation with the U. S. feedgrain and soybean industries to symbolize America's dynamic livestock industry. Its first overseas appearance will be in Italy at the Verona Agricultural Fair, March 8-16, with additional appearances scheduled for international trade fairs in Italy and in other European countries.

The Champ is a reproduction of a Hereford steer and is mounted on a 30-ft. trailer. The steer stands 12-ft. high, 19-ft. long, and nearly 8-ft. wide. The model opens on both sides so the public can walk through and examine its interior.

On a one-year loan to the U. S. D. A. by its owner, The Ralston Purina Company of St. Louis, *The Champ* has toured the United States, Canada, and Mexico for the past two years. Its construction was supervised by staff members of the AVMA.

AVMA Washington Offices Expand

Members will be interested to learn that the AVMA's Washington representative, Brig. Gen. J. A. McCallam (Ret.) has moved into new and larger quarters in the same building that had previously housed the AVMA Washington offices, and now occupies Suite 207-209, at 1507 M Street, N. W.

Increased activities and the need for expanding the staff were the causes of the move completed December 5.

AMONG THE STATES AND PROVINCES

California

Dr. H. S. Cameron Is Twice Honored.—Awarded a Fulbright Fellowship for New Zealand in 1959-1960, Dr. Hugh Stuart Cameron (COR '31), School of Veterinary Medicine, University of California, has also been elected the faculty research lecturer for 1958-1959.

He will deliver his lecture next spring in connection with the annual Charter Day ceremonies at Davis. This award is the first conferred on a member of the veterinary profession on the Davis campus. Dr. K. F. Meyer (ZUR '08) received similar recognition on the Berkeley campus several years ago.

Dr. Cameron has been a teacher and researcher at the University of California since 1936. Prior to this, he was on the veterinary faculty at Cornell from 1931 to 1935. An authority on brucellosis, Dr. Cameron developed the whey test for the disease. This test is cur-



Dr. H. S. Cameron

rently being used on an experimental basis in California to help eradicate the disease by 1960.

Dr. Cameron plans to return from New Zealand by way of Europe.

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Dr. W. W. Stiern Elected to State Senate.—Representing California's 34th senatorial district, Dr. Walter W. Stiern (WSC '38) of Bakersfield, became one of the 40 members of the state senate in January, 1959.



Dr. Walter W. Stiern

Dr. Stiern has been in general practice for 20 years in Bakersfield with the exception of four and a half years in the veterinary corps serving with the Second Air Force in this country and in the China-Burma-India Theater abroad. At present, he is a partner in the veterinary hospital of Stiern, Frederickson & Stiern.

s/ALBERT GOODMAN and JAMES L. FREDERICKSON,
Correspondents.

California Seeks Graduate Veterinarians.

According to an announcement from the California State Personnel Board, openings, located throughout California with the Bureaus of Meat Inspection, Poultry Inspection, and Livestock Disease Control, are now available to graduate veterinarians, with or without experience. The beginning salary is \$530 per month. California residence is not required for these examinations and no California license is required for veterinarians in the state meat and poultry inspection programs. For laboratory or field work, applicants must secure a license within 12 months of employment, but need none at the time of appointment.

Under the state's new selection process, candidates may file on one application form, and may take the examinations for both meat and poultry inspection and for livestock disease control on the same day. Examinations will be held monthly, in a number of cities nationwide. Candidates will be notified approximately a week before the test date of the time and place of the examination.

Application forms and detailed information are available from the California Personnel Board, 801 Capitol Avenue, Sacramento 14.

District of Columbia

Regularly Scheduled Meeting.—This year's initial meeting of the District of Columbia V.M.A. was held at the Armed Forces Institute of Pathology, Jan. 13, 1959.

Major J. N. Shively, Walter Reed Army Institute of Research, narrated a movie entitled "Armed Forces Special Weapon Project—Biochemical Project" and Dr. Lionel Rubin of the Animal Hospital Section, National Institutes of Health, reviewed cat diseases.

The officers for 1959 are: Drs. Allan F. McEwan, Bethesda, Md., president; R. J. Byrne, College Park, Md., first vice-president; Colonel Rowland Rushmore, Kensington, Md., second vice-president; Dr. Raymond Gochenour, Kensington, Md., secretary-treasurer; and Dr. Charles McPherson, Silver Spring, Md., newsletter editor.

Dr. C. D. Van Houweling, Washington, D. C., has been appointed the Association's representative to the AVMA House of Delegates with Dr. J. R. Currey, Washington, D. C., as alternate delegate.

S/WILLIAM I. GAY, *Secretary-Treasurer.*

Illinois

Central Illinois Association.—At the Dec. 4, 1959, meeting of the Central Illinois V. M. A., the following officers were elected for the ensuing year: Drs. Donald J. McDermith, Nokomis, president; Duke W. Morland, Springfield, president-elect; Paul B. Doby, Springfield, secretary-treasurer; and I. J. Miller, Lincoln, representative to the Illinois State V. M. A.

S/PAUL B. DOBY, *Secretary-Treasurer.*

Indiana

State Association.—The seventy-fifth annual convention of the Indiana V. M. A. was held at the Severin Hotel, Indianapolis, January 14-16.

Those appearing on the program were: Drs. R. V. Johnson, Pitman-Moore Company—canine distemper; Gilberto Trevino, A. & M. College of Texas—canine dermatitis and pediatrics; Jacques Jenny, University of Pennsylvania—canine orthopedics; John B. Herrick, Iowa State College—mastitis control; Joe



Left to right—Drs. L. M. Borst, secretary-treasurer; T. W. Freas, vice-president; H. J. Magrane, Jr., president-elect; Leonard Clark, president; and Frank Booth, delegate to the AVMA.

Green, Indianapolis—state veterinarian's report; W. P. Switzer, Iowa State College—atrophic rhinitis and pleuropneumonia-like organisms in swine; C. K. Whitehair, Michigan State University—swine nutrition; F. J. Milne, Ontario Veterinary College—large animal surgery; S. F. Scheidy, AVMA president-elect—AVMA greetings; L. R. Barnes, Indianapolis—report from Animal Disease Eradication Branch, U.S.D.A.; and John R. Dick, Fort Dodge Laboratories—lungworm disease.

Dr. Homer Carter, practitioner, Fairmount, presented a report from the AVMA House of Representatives and Dr. L. M. Hutchings, Purdue University, reviewed a report from the AVMA Executive Board.

Newly elected officers of the Association are: Drs. L. A. Clark, Bedford, president; H. J. Magrane, Jr., Mishawaka, president-elect; Thomas W. Freas, Veedersburg, vice-president; and Lawrence M. Borst, Jr., Indianapolis, secretary-treasurer.

Kansas

Kansas Association.—Convening for the fifty-fifth time, the Kansas V. M. A. met at the Hotel Broadview in Wichita, Jan. 13-15, 1959.

Participating in the Kansas program were: Drs. J. H. Richardson, Kansas State Board of Health—veterinarians in public health; William C. Banks, A. & M. College of Texas—atomic fallout; C. D. Lee, Iowa State College—poultry practice; J. R. Hay, AVMA director of professional activities—AVMA activities; E. R. Walker, Pawhuska, Okla.—equine practice; J. T. McGrath, University of Pennsylvania—nervous disorders; W. F. Irwin, Tulsa, Okla.—skin diseases.

Newly elected officers of the Kansas V. M. A. for 1959 are: Drs. Loyce D. Jernigan, Council Grove, president; A. V. Schwartz, Jr., Salina, president-elect; and Melvin W. Osburn, Manhattan, secretary-treasurer.

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Women's Auxiliary.—The twenty-fifth annual meeting of the Women's Auxiliary to the Kansas V. M. A. was held in conjunction with the fifty-fifth annual meeting of the State Association at the Hotel Broadview in Wichita, Jan. 13-15, 1959.

The recently revised constitution was read, and approved, and reports were heard from the various committees. Mrs. K. M. Curts, Kansas City, reported that 180 Kansas V. M. A. Auxiliary members and 225 AVMA Auxiliary members were present.

Officers for 1959 are: Mrs. Fayne Oberst, Manhattan, president; Mrs. T. J. Leasure, Lawrence, president-elect; Mrs. S. Lester Jackson, Hiattville, secretary-treasurer; Mrs. Fred Ogilvie, Kansas City, historian; Mrs. A. L. Coates, Jr., Louisburg, public relations; and Mrs. L. D. Jernigan, Council Grove, liaison officer. Mrs. Curts was appointed delegate to the AVMA Convention to be held in Kansas City next August.

s/MRS. S. LESTER JACKSON, *Secretary-Treasurer*.

• • •
Kansas Association Elects Dr. Hart, Veterinarian of the Year.—Among the highlights of the fifty-fifth annual convention of the State Association last January, in Wichita, was the



Dr. Forrest L. Hart

presentation of the Kansas Veterinarian of the Year Award for 1958 to Dr. Forrest L. Hart (KCV '18) of Hiawatha.

The award was given, at a banquet held January 14, at the Hotel Broadview by Dr. C. W. Bower (KSC '18), Topeka, the Association's first recipient of the award. Dr. Hart has devoted 40 years to large animal practice.

New Jersey

Southern New Jersey Association.—New officers of the Southern New Jersey V.M.A.,

Ohio

THE GUARDIANS OF YOUR HEALTH



The above exhibit was prepared under the auspices of the Public Relations Committee of the Ohio State V. M. A. Dr. A. G. Maddon, Jr. (OSU '34), chairman of the nine-man PR Committee, credits this exhibit with contributing greatly to interprofessional understanding.

Since its first showing last August at the Ohio State Fair in Columbus, this exhibit has been shown at numerous county fairs, state and local association meetings, and at pharmaceutical conventions.

Inc., are as follows: Drs. Philip Bookman, Burlington, president; Walter Snyder, Had-donfield, vice-president; Marvin Rothman, Collingswood, secretary; and Florian J. Olbrich, Blackwood, treasurer.

The meeting place of the Association has been changed. The regular monthly meeting will now be held at the Collmont Diner in Collingswood on the fourth Tuesday of the month.

s/MARVIN ROTHMAN, Secretary.

North Carolina

Eastern North Carolina Association Moves Meeting Day.—Effective with the February, 1959, meeting of the Eastern North Carolina V. M. A., the regularly scheduled meeting of the Association will take place on the last Tuesday evening of each month, with time and place specified monthly.

Previously, meetings were held the last Friday of each month.

s/B. H. BROW, Secretary-Treasurer.

Pennsylvania

Bucks-Montgomery Association.—Dr. Mark W. Allam, dean, School of Veterinary Medicine, University of Pennsylvania, and Mr. William M. Posey, Dr. Allam's assistant for development, public relations, and alumni affairs, were the speakers at the regular meeting of the Bucks-Montgomery V. M. A. held in Doylestown on Dec. 10, 1958.

The Association's president, Dr. Cameron S. Wilson, Richboro, introduced the speakers. Dr. Allam reported on the recent and proposed changes in the curriculum, designed to gear veterinary education toward the practical needs of modern veterinary practice. Mr. Posey reviewed the plans for the new buildings proposed for the School's West Philadelphia campus and for New Bolton Center, its branch in farm animal work at Kennett Square, Pa.

s/M. J. DEUBLER, Secretary-Treasurer.

Saskatchewan

Dr. J. S. Fulton Retires.—Former director of the Animal Diseases Laboratory at the University of Saskatchewan, Dr. J. S. Fulton retired from that position in June, 1958.

Born in Glasgow, Scotland, Dr. Fulton attended Glasgow University before his family moved to Canada. After graduation from Mc-Killip Veterinary College in 1918, he did post-graduate work at Rush Medical College, Chicago.

In 1926, Dr. Fulton became assistant at the Animal Diseases Laboratory at the University of Saskatchewan and had been director since 1928. Dr. Fulton has made notable contributions with regard to fowl cholera, swamp fever in horses, and swine erysipelas.

In his work with equine encephalomyelitis virus, Dr. Fulton found that a number of mental patients who had been admitted to institutions during and after an epizootic of the disease in horses were serologically positive to the Western Equine Encephalomyelitis virus. In 1953, he isolated the virus of swine pneumonia and reproduced the disease.

Following his retirement, he established himself in a private laboratory, where he provides diagnostic services for the medical profession in Saskatchewan.—*The Veterinary News*, 20, (November, 1958): 22-23.

STATE BOARD EXAMINATIONS

TEXAS.—Next licensing examination will be held June 1-3, 1959; A. & M. College of Texas, College Station. The completed application must be received in the Board office not later than 30 days before the examination date. Applications should be sent to Mr. T. D. Weaver, 287 Capital National Bank Building, Austin 16, executive secretary, State Board of Veterinary Medical Examiners.

DEATHS

Star indicates member of AVMA

James Audley (CVC '04), 85, Hartland, Wis., died Nov. 29, 1958. He had practiced in Hartland for over 50 years.

B. F. Barber (CVC '02), 89, Fonda, Iowa, died at the Lutheran Hospital in Fort Dodge on Nov. 23, 1958, following a stroke. He had been in the hospital for a week prior to his death.

Walter C. Buck (COR '12), 70, Danville, N.Y., died Dec. 7, 1958, at the home of his daughter in Rochester where he and his wife had gone for a day's visit. Born in Livonia, he had moved to Dansville 38 years ago.

***Joseph C. Jirikowic** (USC '09), 80, Bot-tineau, N. Dak., died in December, 1958, at the home of a son in Port Angeles, Wash., where he had been visiting. Death was attributed to a heart condition.

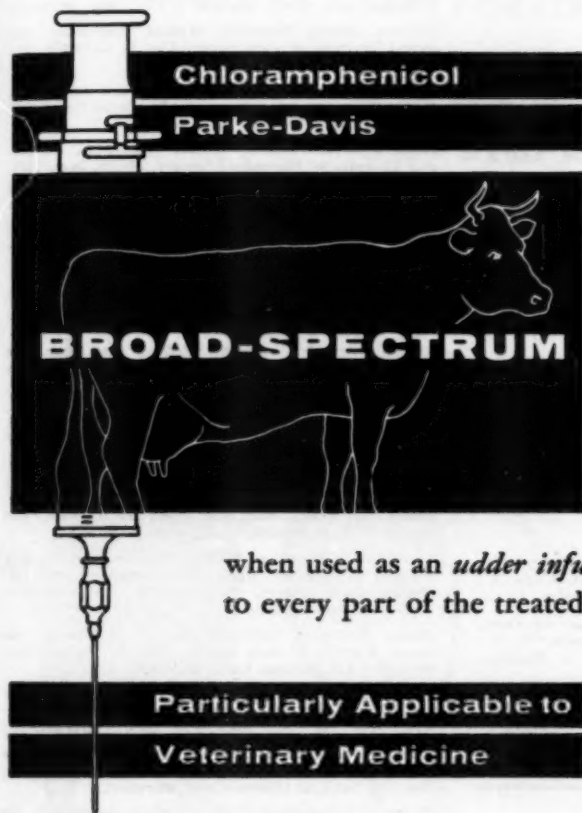
Dr. Jirikowic was a past-president of the North Dakota V. M. A.

Thomas K. Jones (CVC '18), 63, Jacksonville, Ill. (formerly of Springfield), died Dec. 5, 1958, at the Alexian Brothers Hospital in Chicago. He was attending the International Livestock Show there when he was stricken.

Employed in government service for many years and later by the State of Illinois, Dr. Jones was a pioneer in the eradication of bovine tuberculosis and brucellosis, having directed programs for the federal government in Mississippi and Indiana.

Vaughn C. Lancaster (UP '37), 61, New Castle, Del., died Nov. 27, 1958. Finding it necessary to limit his practice in recent years due to ill health, Dr. Lancaster nevertheless had been working until the day before his death.

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ORGANIZATION SECTION

COMING MEETINGS

Notices of coming meetings must be received 30 days before date of publication.

Alabama Veterinary Medical Association. Fifty-second annual meeting. Houston Hotel, Dothan, Ala., March 15-17, 1959. M. K. Heath, secretary.

American Veterinary Radiology Society. April 7, 1959, Nassau Tavern, Princeton, N. J. Dr. Julius J. Fishler, Elkhart, Ind., secretary.

New Jersey, Veterinary Medical Association of. Diamond jubilee meeting. Princeton Inn, Princeton, N. J., April 8-9, 1959. John R. McCoy, Rutgers University, New Brunswick, secretary.

Oklahoma State University. Annual Oklahoma conference for veterinarians. College of Veterinary Medicine, Campus Veterinary Medical Center, April 13-14, 1959. John H. Venable, steering committee chairman.

Pennsylvania, University of. Fifty-ninth annual conference of veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, April 28-29, 1959. Mark W. Allam, dean.

Illinois, University of. Fourth Biennial Symposium on Animal Reproduction. University of Illinois, Urbana, June 18-20, 1959. Address P. J. Dziuk, 111 Animal Genetics, University of Illinois, Urbana, for further information.

Third Pan American Congress of Veterinary Medicine and Ninety-Sixth Annual Meeting. American Veterinary Medical Association. Joint meeting. Kansas City, Mo., Aug. 23-27, 1959. H. E. Kingman, Jr., executive secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill. B. D. Blood, secretary-general, Directing Council, Pan American Congress of Veterinary Medicine, P.O. Box 99, Azul, F.C.N.G.R., Argentina, S.A.

Foreign Meetings

International Veterinary Congress. Sixteenth session. Madrid, Spain, May 21-27, 1959. Prof. Pedro Carda A., general secretary, Calle Villanueva 11, Madrid.

U.S. COMMITTEE: Dr. W. A. Hagan, chairman, New York State Veterinary College, Ithaca, N. Y.; Dr. J. G. Hardenbergh, secretary, 600 S. Michigan Ave., Chicago 5, Ill.

Third World Congress on Fertility and Sterility. Amsterdam, Holland, June 7-13, 1959. Dr. L. I. Swaab, Sint Agnietenstraat 4, Amsterdam, Holland, honorary secretary.

APPLICATIONS

Applicants Not Members of Constituent Associations

In accordance with paragraph (c) of Section 1, Article 1, of the Bylaws, the names of applicants who are not members of constituent associations shall be published in the JOURNAL. Written comments received by the Executive Secretary from any active member regarding the application as published, will be furnished to the Judicial Council for its consideration prior to acceptance of the application.

THOMASSEN, ROBERT W.

U.S. Army Medical Research and Nutrition Laboratory, Fitzsimon's Army Hospital, Denver, Colo.
D.V.M., Colorado State University, 1956.
Vouchers: S. W. Thompson and E. E. Dean.

PAUL, BALBIR SINGH

Punjab Veterinary College, Hissar, India.
B.V.Sc., Punjab Veterinary College, 1946.
Vouchers: C. R. Smith and R. W. Redding.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. Capt. Joe T. Williams, Qtrs. 931-C, Maxwell A.F.B., Ala., secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Counties Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. J. W. Langley, Jr., P.O. Box 5013, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tucson, Ariz., secretary.

ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. John S. Blackard, 420 Appian Way, Richmond, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2333 McKinley Ave., Fresno, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. Norman E. Cunningham, 2703 "M" St., Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P.O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 47 Mann Ave., Watsonville, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. T. J. Carleton, 325 W. Lockford St., Lodi, Calif., secretary-treasurer.

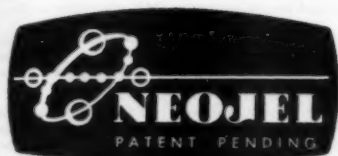
Orange Belt Veterinary Medical Association, the second Monday of each month. Robert Lapham, 1194 W. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. Robert Lawson, Los Altos, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, 2075 Silverado Trail, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. R. A. Mueller, 6420 Freeport Blvd., Sacramento, Calif., secretary.



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San Diego County Veterinary Medical Association, the fourth Tuesday of each month. E. P. Bogart, P.O. Box 738, Vista, Calif., secretary.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Dr. V. H. Austin, 14931 Oxnard St., Van Nuys, secretary-treasurer.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

Santa Clara Valley Veterinary Medical Association, the fourth Tuesday of each month. Kay Bewley, 1410 N. 4th St., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Robert Schroeder, 9738 Tecum Rd., Downey, Calif., secretary.

Tulare County Veterinary Medical Association, the second Thursday of each month. Lionel H. Brazil, Route 4, Box 53, Tulare, Calif., secretary.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. Dr. James Voss, Veterinary Hospital, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings

of January, March, May, and October. R. B. Goehenour, 10109 Ashwood Dr., Kensington, Md., secretary-treasurer.

FLORIDA—Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p.m., place specified monthly. L. R. Poe, 753 W. Fairbanks Ave., Winter Park, Fla., secretary-treasurer.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. Fred Jones, 3606 S. Dale Mabry, Tampa, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodson's Restaurant, Stephen C. Hite, 5807 105th St., Jacksonville 10, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. John Webb, P.O. Box 183, Cantonment, Fla., secretary-treasurer.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. B. W. Bigger, 2833 S. 4th St., Fort Pierce, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Joe B. O'Quinn, 1690 E. 4th, Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary-treasurer.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peach-

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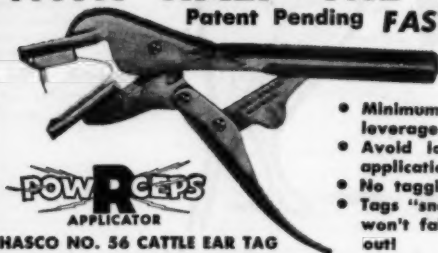
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Tamper-proof! Self-piercing! Self-sealing! Rounded
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tree St., Atlanta. W. V. Smith, 1039 Marietta St., N.W., Atlanta, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. H. G. Blalock, Jr., 2190 Highland Ave., Augusta, secretary.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. E. I. Pilchard, Champaign, Ill., secretary-treasurer.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., secretary-treasurer.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, P.O. Box 183, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breere House, Ankeny, Iowa. John Herrick, 202 S. Hazel Ave., Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Veterinary Medical Society, the Second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the

(Cont'd on adv. p. 38)

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All trim parts are chrome plated

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The instant you add water,
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turns into a crumbly-moist hamburger-
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ORDINARY MEAL. As liquid is added, it forms unabsorbed "puddles" on surface.



QUICK KEN-L-MEAL. Liquid is absorbed almost instantly as added; no wasted time!

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Saves time—cuts mixing time in half. Then it *stays* crumbly-moist—won't pack down or cake in the feeding dish. So it saves clean-up time, too!

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Sends out strong "meat signals"
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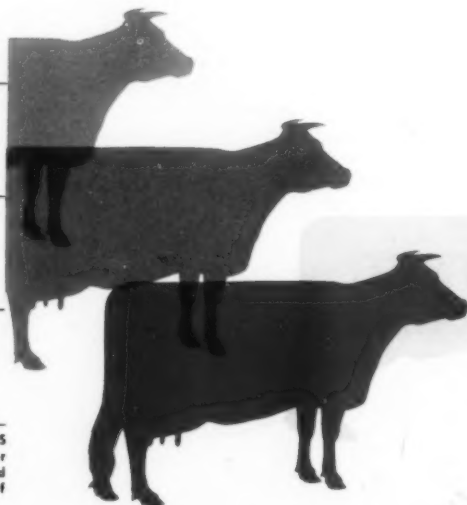
THE NINE ORGANISMS SHOWN AT THE LEFT ARE "ETIOLOGIC CULPRITS" OF BACTERIAL MASTITIS—THE ORGANISMS KNOWN TO CAUSE THIS DISEASE.

Neothion controls all 9 mastitis-causing bacteria

Neothion contains the new Squibb antibiotic, *thiostrepton*, plus neomycin. This exclusive Squibb formula controls all nine types of mastitis-causing bacteria, including strains which have become resistant or immune to other antibiotics which have been extensively used for this purpose. You can administer Neothion with the confidence that this product provides fast, dependable, economical anti-mastitis therapy.

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- 2. NEOMYCIN.** A highly effective adjuvant to thiostrepton. Together these two antibiotics offer you a broader range of antibacterial activity than any single antibiotic now available for intramammary administration.
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NEOTHION	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Triple Sulfas	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Penicillin	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Streptomycin	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Neomycin	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Brand A BROAD SPECTRUM ANTIBIOTIC	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
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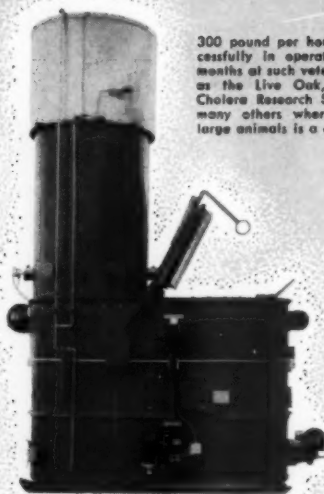
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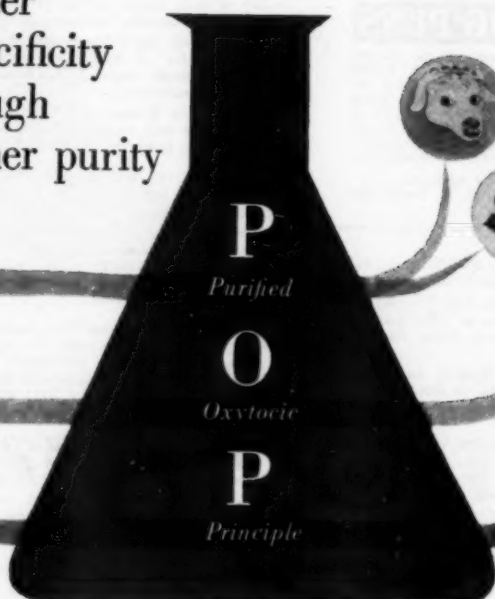
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third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, P.O. Box 162, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wineslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tues-

day of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, 202 S. Stone St., Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. W. A. Danker, Dows, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Leonard D. Krinsky, 6111 Hartford Rd., Baltimore, Md., secretary.

MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary. Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

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One clinical study of 328 cases of milk fever showed that calcium I.V. and Parterol I.M. were effective in 98% of the patients.¹

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Calsem, *Calsem-D* and *Calsem-DM* in 500 cc. vials.

1. Harris, J.R., and Clarkson, T.B., Prevention of Relapses in Milk Fever, Vet. Medicine, 12:696 (Dec. 1955)

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Roy R. Conner Dies

Mr. Roy R. Conner, veterinary marketing manager of Schering Corporation, died Dec. 21, 1958, at his home in Glen Rock, N.J. He was 39 years old.



Roy R. Conner

Mr. Conner had been with Schering since the company first formed a veterinary marketing department in 1954. He had been manager of the operation since its inception. Prior to joining Schering, Mr. Conner served as veterinary sales supervisor at Pitman-Moore Company, Indianapolis, Ind.

A native of Reading, Pa., Mr. Conner completed his college training at Albright College in Reading. He was president of the American Veterinary Exhibitor's Association.

Beef Cattle Raising by Areas

In the past 20 years, since 1939, the beef-breeding cow population increased most (424%) in the 13 northeastern states; next most (336%) in 12 southeastern states, with the smallest increase (70%) in the 11 Rocky Mountain and western states. The greatest number of breeding cattle, 9,127,000, are still found in the six plains states, including those from North Dakota to Texas, but the 12 southeastern states with 5,820,000 now have more breeding cattle than have the 11 western states with 5,729,000.—*Successful Farm.* (Jan., 1959):36.

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Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossini, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Edwin E. Epstein, 4877 Natural Bridge Ave., St. Louis 15, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoill, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Highs Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

South New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Marvin Rothman, 718 Dwight Ave., Collingswood, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, third Wednesday of each month, Fez Club, Albuquerque, N.M. Jack Ambrose, 3018 N. Rio Grande Blvd., Albuquerque, secretary-treasurer.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. C. G. Sims, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

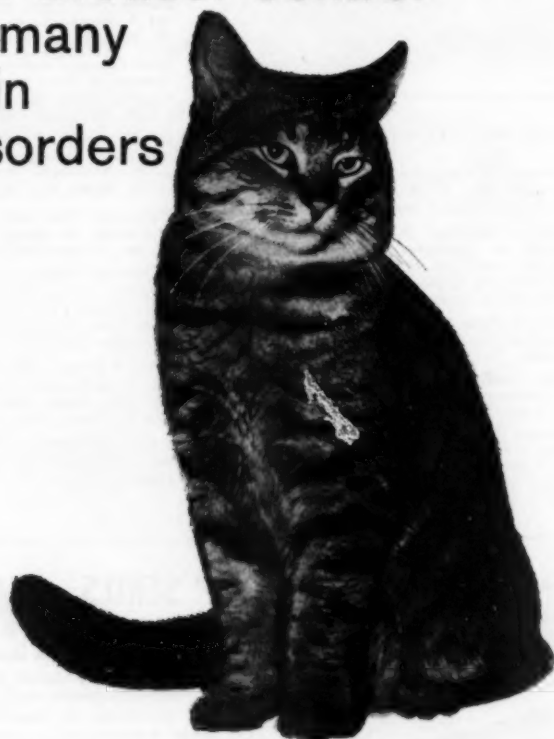
Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. Viuu Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwag, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis,

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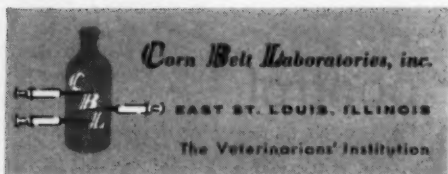
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451 E. Galbraith Rd., Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, 3120 Valley View Dr., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, 8208 Carnegie Ave., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, 6941 Far Hills Ave., Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the Fourth Tuesday of each month, at 9:00 p.m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first

Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1683 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Claude A. Tigert, 3032 N.W. 68th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays, City-County Health Dept. T. E. Messler, 3104 E. 51st St., Tulsa, Okla., secretary.

(Cont'd on adv. p. 46)

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*bactericidal action
promptly controls
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93-95%^{1,2} of calves
no development of
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Remissions of calf scours following treatment with ENTEUFUR have been of a dramatic nature and uniformly high. In widespread field tests, cure rates of 93% and 95% have been obtained.^{1,2}

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1. Osborne, J. C. in *New Horizons in Chemotherapy*. Proceedings of First Regional Conference on the Nitrofurans in Veterinary Medicine. In press.

2. Bull, W. S.: *N. Amer. Vet.* 38: 3 (Jan.) 1957.

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1. Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: *Vet. Med.* 51:413 (Sept.) 1956.

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OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m. Ireland's Restaurant, Lloyds, 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinary Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

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Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. Jack E. Habluetzel, Route 1, Box 65-N, Ingleside, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwestern Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barron, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. Jordan Lewis, Menomonee Falls, Wis., secretary-treasurer.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Wisconsin Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming, 209 E. 4th St., Marshfield, Wis., secretary.

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Wanted—veterinarian. Lucrative area for cows and small animals 125 miles from New York City, good site. Financial aid to right man; a real opportunity. Address "Box E 9," c/o JOURNAL of the AVMA.

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JOURNAL of the AVMA

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Veterinarian wanted — Missouri - licensed for A.A.H.A. hospital. State all particulars in first letter. Address "Box B 42," c/o JOURNAL of the AVMA.

Energetic veterinarian wanted for partnership in active practice, Chicago area; 3-bedroom apartment available. Write particulars. Address "Box E 3," c/o JOURNAL of the AVMA.

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Relief veterinarian available, New York and New Jersey licenses, small animals only. Address D.V.M., 1007 80th St., North Bergen, N.J.

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Relief veterinarian available for small animal work in New York. Licensed, extensive experience; prefer area within 50 miles of New York City. Address "Box E 11," c/o JOURNAL of the AVMA.

To insure prompt delivery, replies should be carefully addressed: Complete box number as given in the ad, AVMA, 600 S. Michigan Ave., Chicago 5, Ill.

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The New Zealand Department of Agriculture has vacancies for veterinarians on the staff of its Animal Industry Division at various locations.

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Further information and forms of application may be obtained from the New Zealand Embassy, 19 Observatory Circle, N.W., Washington 8, D.C.

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